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IRON TRADE REVIEW

Registered U. S. Patent Office

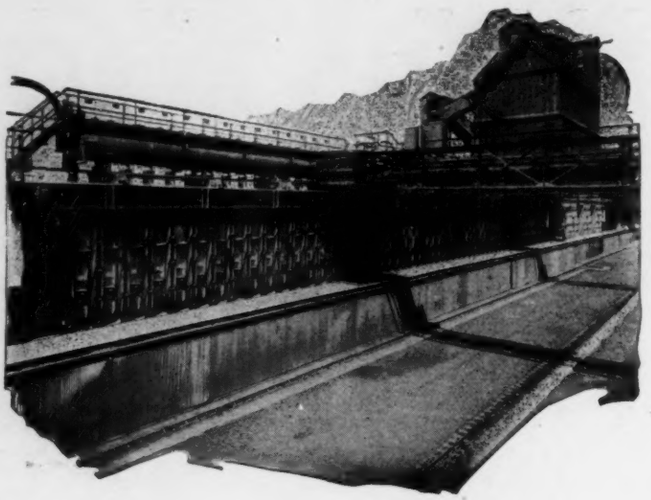
CLEVELAND, O., MAY 10, 1928

Thirty five ton per hour skelp mill furnace recently completed for Wheeling Steel Corporation. A lower fuel consumption and a higher than rated capacity have pleased the purchasers.

"Here Is The Way It Should Be Built"

WHEN a Chapman-Stein engineer unfolds a blue print of a furnace design for your particular heating problem and asserts with confidence "This is the way it should be built" you can be sure that the combined thought of the entire Chapman-Stein engineering staff is back of that recommendation. Many years of furnace building experience, with some mistakes to be sure, but with an outstanding majority of successful accomplishments have fitted them to make such recommendations. These together with an unquestioned financial responsibility and a reputation for fair business policies are earning the confidence of steel plant executives everywhere.

The Chapman-Stein Company
Mount Vernon, Ohio



Carnegie's New Becker Oven Plant

Four additional batteries of Becker Ovens consisting of a total of 348 ovens have recently been placed in operation by The Carnegie Steel Company at Clairton, Pa. Individual oven capacities are the largest in America, each oven taking a charge of over 20 tons of coal.

The plant at Clairton is the largest by-product coke plant in the world and has a capacity of over 30,000 tons of coal per day.—More than one-fifth of American by-product coke is made at this plant.

There are 1482 ovens at Clairton all designed and built by the Koppers Company.

The Koppers Company

Pittsburgh, Penna.

Chicago, Ill. **New York City**

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Number 19

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Cleveland, O.
May 10, 1928

Small Plant Self-Contained, *with GENERAL-PURPOSE MACHINES*

Rolls-Royce Uses High-Production Equipment on Low-Output Basis—Special Units Are Compact

By H. R. Simonds

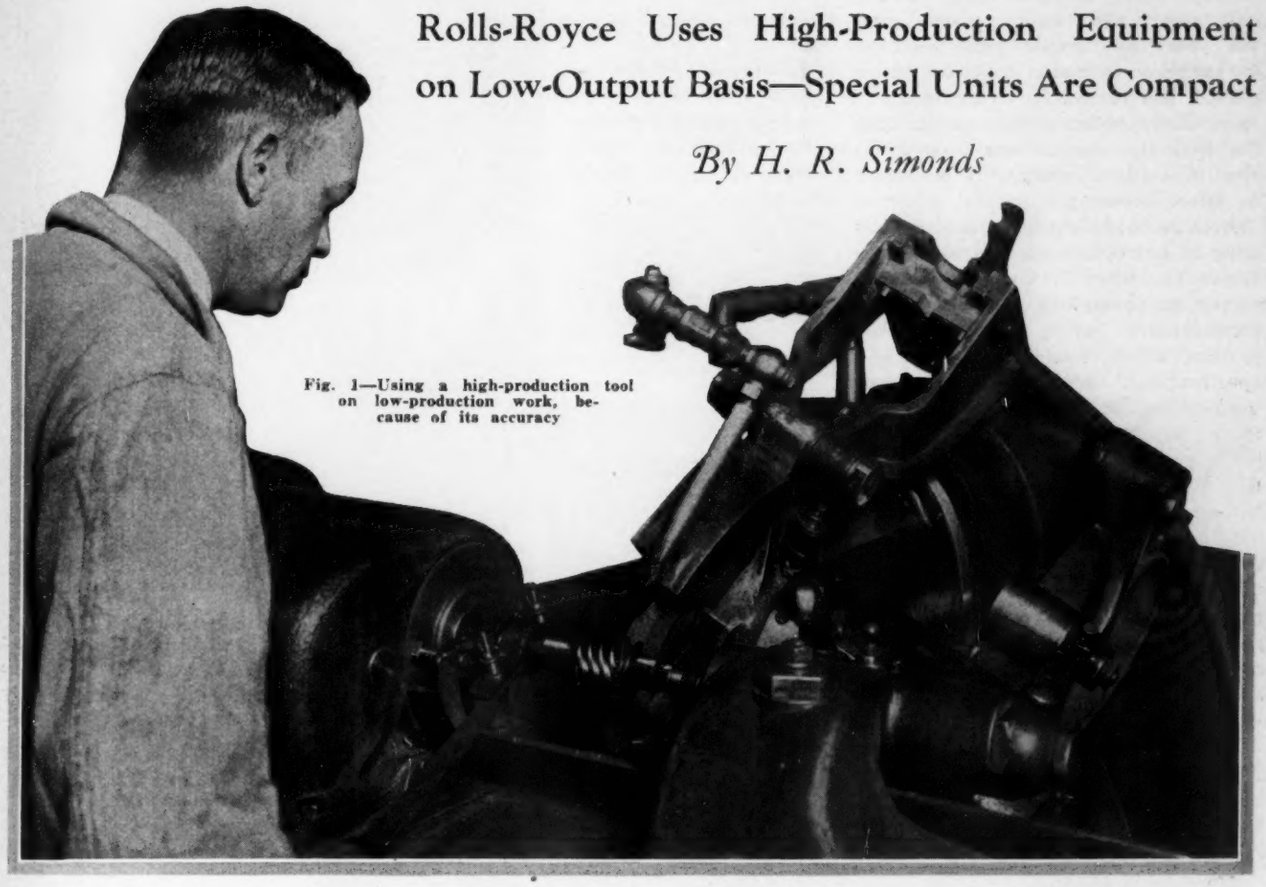


Fig. 1—Using a high-production tool on low-production work, because of its accuracy

ONE of the most interesting features of the development of American methods of manufacture is the constant conflict between the exigencies of production and the desire to control materials and methods. Many manufacturers of assembled products prefer to purchase parts from companies specializing in that work. On the other hand, many concerns prefer to include the supply of materials, all manufacturing operations and assembly under one management.

Apparently much can be said for either policy, inasmuch as both have staunch supporters in the ranks of leading industrial executives. In the automobile field, several motor car companies find it advantageous to purchase practically all of the parts. Their plants are merely "assembly" shops. These builders place the responsibility for manufacture and for quality on the shoulders of the parts makers, who are specialists in their respective lines. Undoubtedly this policy of delegating work to specialists under contract has merit.

LIKE the Ford Motor Co., some of whose production methods were described recently in a series of five articles in IRON TRADE REVIEW, the Rolls-Royce Co. endeavors to control its materials and parts. How this is accomplished by the latter company, with its comparatively small output, is told in the accompanying article.

However, a number of the larger automobile builders have gradually broken away from this policy. More and more they have undertaken to do all of the work under their own supervision—presumably because they believe that direct control not only insures pre-

scribed quality but also tends to simplify production problems.

In the case of the Ford Motor Co. and General Motors Corp. the volume of operations is such that the control of all operations undoubtedly is economical, yet companies operating on a much smaller scale also have adopted this policy. In these cases control undoubtedly is the motive.

An example of the selfcontained plant on a low production basis is found in the manufacture of Rolls-Royce automobiles at Springfield, Mass. Elaborate machinery is used in this plant for producing in one unit complicated parts, which even ten years ago would have required an entire department, if not an entire plant. The reason for bringing many specialized production operations into the Rolls-Royce plant has been a desire to control quality, rather than to effect economy.

Because many concerns are specializing in automobile springs, the Rolls-Royce Co. when it started manufacturing at Springfield some years ago endeavored to buy in the open market springs which would meet its rigid specifications. Difficulty in securing uniform quality, however, soon led to the establishment of a spring department in the Rolls-Royce plant. Sections of this department are shown in Figs. 2 to 4. The machine at the right is a combination forming and tempering machine. At the right is the furnace and in the foreground is another quenching machine. The whole spring department including testing and grinding is all located within the same enclosure and forms a complete little spring manufacturing plant in itself.

Despite the fact that economy was not the chief consideration in laying out this plant, modern machinery makes it possible to manufacture on a relatively low production basis and still have unit costs fairly close to prices charged by a high production manufacturer of specialized material.

The high production manufacturer, of course, has many opportunities for cutting corners and saving costs that are not open to the small producer. Nevertheless, the advantage of high production is apt to be exaggerated. The large tonnage user still has an advantage in buying. He still has a lower unit overhead charge and he still has a better opportunity to keep individual tool operations at capacity rate. These are important items and it is not the purpose to discredit them here. High production methods which have brought American industry to the fore in world affairs are here to stay. They are part and parcel of modern civilized life. Part, also, of modern life is the design of machinery to lower the cost of manufacture in cases where production for one reason or another is not particularly high. Given a unit production on some definite product of say, 1000 a day. Then, if a machine is designed to work at greatest efficiency on a basis of 1000 of this product a day, the unit cost of manufacture on the 1000 basis differs but little from the unit cost on a 2000 basis in which case two of such machines would be used. This general principle is illustrated in many of the operations at the Rolls-Royce plant. Wherever specifications require that a part pass a severe test, it is necessary that the conditions of that test be carefully controlled by the manufacturer and this is most conveniently done in his own plant. Each Rolls-

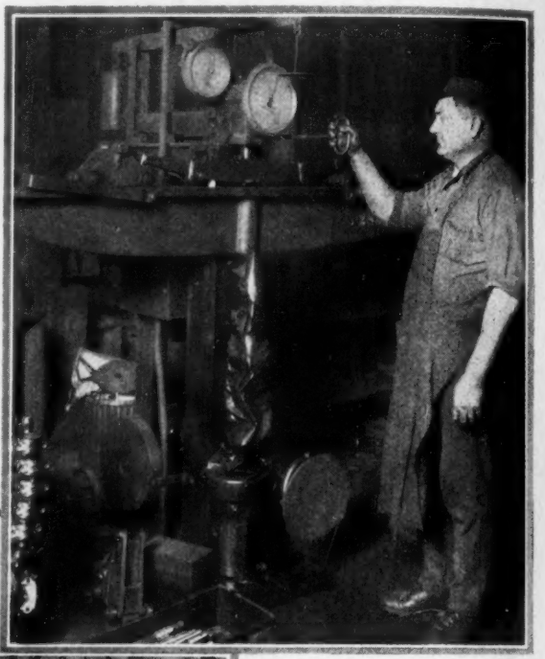


FIG. 3 (Below)—This machine forms and quenches springs in one operation

Fig. 4 (Right)—Each spring is tested under a load many times greater than the maximum in actual service

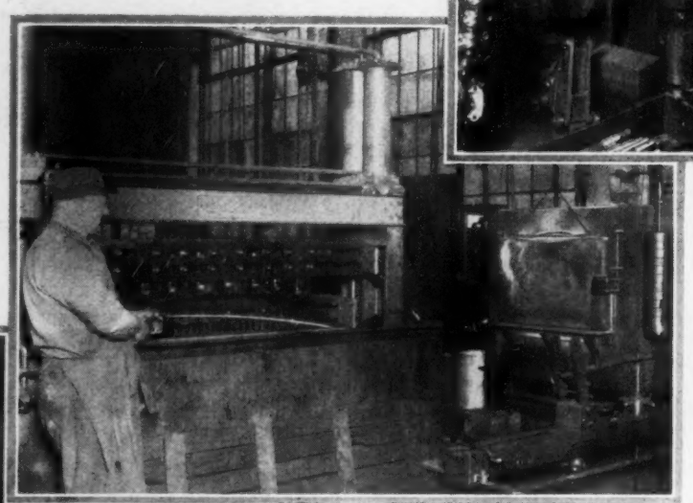


FIG. 2—All operations in the production of springs take place in one department. At the left, polishing

Royce spring must undergo the test shown in Fig. 4. Here the spring in its normal operating position with the leaves convex upward, is placed between two roller supports. A load is then applied at the center until the spring bends backward as shown. For a given deflection, the indicator must show a load ranging between certain specified limits. This testing machine is in the spring department and forms part of the normal manufacturing sequence.

Rolls-Royce body springs are made of nickel spring steel which comes in the form of strips and is cut to length on power shears. A hole is then drilled in the center of each piece. After this the pieces are placed in the furnace and heated to a cherry red. The next operation tapers the ends of the spring while hot. This is done on an eccentric roller. Following this tapering and while the piece is still hot, a punch press operation trims the ends. The piece is then put back into the furnace and heated to 1600 degrees Fahr. It then goes on to the forming and tempering machine shown in Fig. 3.

This machine by means of a series of plungers or contacts, folds the hot spring down over a form and holds it firmly in this position while the entire mechanism is dropped down into an oil tank contained in the base of the machine. By means of a circulating coil the oil is kept at constant temperature. This whole double process of forming and quenching is done very rapidly. The operator with a pair of tongs, takes a piece out of the furnace, sets it in place and then with a single move of a lever, causes it to be first formed and then quenched. While one piece is quenching, he reaches in the furnace for the next piece.

After quenching, the springs are again heated to a draw temperature of 900 degrees Fahr. A test piece is cut off the end of each spring at this point and the balance of the piece goes to a heavy press for a final trimming and forming. After forging and heat treating the spring leaves are sandblasted and then polished. This polishing is done on a felt wheel set in 60 emery. The polishing and even the sandblasting are performed within the spring department enclosure. Unusually strong suction is used in the exhaust at the grinding wheel to prevent dust and grit from getting over to other machines.

In other departments of the large plant at Springfield, special machines of nearly all designs are to be found. About a year ago the company had difficulty getting the required design and quality in electrical starting and ignition equipment. It therefore organized an electrical department and is now building all of this equipment at a price comparing favorably with the previous cost of buying equipment in the outside market, and at the same time, has the control of quality constantly under supervision. The unusual character of this electrical department may be judged from the fact that the present production of Rolls-Royce cars is but nine cars a week. This is a low production for automobiles, but it is far lower for electric generators and motors. The difficulty is partially overcome by operating the department only for certain days each month.

Here again, modern machinery makes procedure possible which would not have been possible even ten years ago. Having once standardized the design of various electrical parts, automatic and semiautomatic tools will turn these out without the necessity of having operators especially trained in electrical work. Thus a gang may be transferred from the electrical department to one of several other departments when the electrical department closes down for a few days.

The operation shown in Fig. 5 illustrates another use of special tools. This is an automatic worm grinder developed for high production work. Yet at the Rolls-Royce plant it is used to grind the steering worms of which nine are required a week. In this case, accuracy in a production tool is such as to make it advantageous to use the tool on the extremely small quantity required.

The plant departs from its policy of building one complete part in one place or department in its general grinding department. Here the difficulty of low production is partially overcome by the flexibility of the tools and the personnel. From 40 to 45 operators are employed in this department. These operators are far different from the usual production job men. Each of the 40 has been carefully trained on practically all of the work coming into the department, so that he may be switched at any time from one job to another.

Just what this means is better understood from a little description of

(*Concluded on Page* 1211)

Fig. 5—Special jigs make it possible to use one grinding tool for many classes of work

Designs Special Gas-fired Furnace To Heat Stock for Upsetting

Unit Features Over and Under Firing from Top and Front—First Cost Is Low and Repairs Prove Economical—Refractory Life High

By R. C. Gosreau

IN CONNECTION with the heating of tubular stock for an upsetter, as well as heating a nickel steel bar stock for upsetter work, a special furnace using gas fuel was designed and has shown unusual economy. The novel idea in the furnace was the over and under firing from top and front. Upper and lower firing brought the work in the zone of high temperature heating without burning; while front and top firing produced a flame of equal intensity and temperature at each section of the furnace and at the same time reduced the size of the flame at each firing point. The designer found this type of multiple burner furnace to possess greater control and finer flexibility than the uni or biburnered furnace.

The furnace is shown in the accompanying illustrations, was built to handle stock 1-inch diameter, 11 gage, and ran up to 2½-inch diameter with ⅛-inch walls. Simultaneously with this work, another furnace of the same design was put on the forging of 1, 1¼, 1⅜ and 1½-inch nickel steel bar stock for upsetter work. The furnace was constructed of angle iron legs and cross braces, with ¼-inch shell plates. The lining consisted of 4½-inch insulation against the shell, with 4½-inch high-grade refractory lining against the heat. The refractory brick joints were rubbed and washed with a good refractory cement in the consistency of a cream. All joints were evenly set.

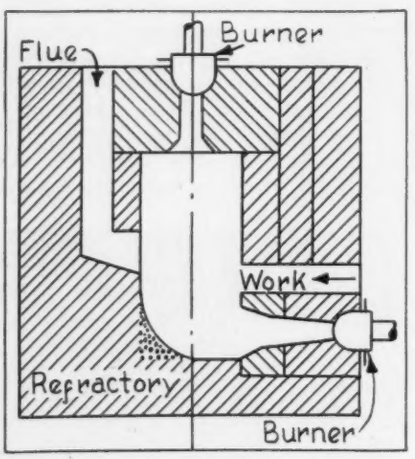


Fig. 1—Cross section of gas-fired forging furnace

Burner blocks in the roof were formed of special shapes, perforated for the burner. Each block was individual, and in case one block became cracked or otherwise necessitated changing, it could be taken out and a new one replaced without tearing out the whole furnace setting. The bottom of the furnace was set up with three courses of refractory brick on one course of insulating brick against the shell. The refractory brick bottom was surfaced with a thick cream of refractory cement to about ¼-inch. The back of the hearth was rounded up to the back wall with stiff cement, thus forming a curved firing wall for the front set of burners.

The front burners were set in individual blocks, and the square opening surrounding the round burner packed with stiff cement. The working front of the furnace was constructed of tile above and below the working opening, which was 2½ inches high on the tube furnace; and 1½ inches high on the bar stock furnace.

The front of the furnace was protected from flame and radiated heat by the erection of a heat apron, eight inches away from the furnace. This sheet and angle iron frame was lined with refractory insulating brick, giving a front flue 2½ inches wide across the whole length of the furnace. Any flame and gases leaving the front of the furnace found their exit up this long flue, thus protecting the workmen, and directing any waste gases upward from the furnace. Two end flues, in the furnace proper, carried off the combustion gases from the heating chamber. Combustion and heating take place in the same chamber.

Manufactured city gas of 530 B.t.u. was the fuel burned and was supplied to the furnace at 12 pounds gage pressure by a reciprocating gas compressor. The burner was an integral unit having the mixer tube and the burner nose in one. Gas was fed to the intake nozzle at the stated pressure and air was taken in from the free atmosphere through an opening regulated by an adjustable shutter. Excess air could be controlled by

The author, R. C. Gosreau, is a metallurgical engineer, 150 Euclid West, Detroit. The furnace described in this article was designed and constructed by him.

Table I

Operations of Furnace Heating Tubular Stock

For upsetting work, an 8-inch length of the stock was heated. Temperatures of the furnace on the stock line ranged from 1950 to 2150 degrees Fahr.

No. of pieces forged	Weight forged, pounds	Time, hours	Gas consumed, cubic feet	Cu. feet of gas per pound	Stock forged Diameter, inches	Stock forged Gage No.
3,700	3,130	5.35	6,050	1.93	1	11
1,540	1,300	2.08	2,630	2.02	1	11
Holding heat in furnace to 2,060 degrees Fahr.			300	.....	....	....
1,995	1,685	3.0	3,150	1.87	1	11
5,960	5,045	9.0	10,190	2.02	1	11
5,880	4,960	9.0	9,720	1.96	1	11

Table II

Operations of Furnace Heating Nickel Bar Stock

Number of pieces forged	Weight forged, pounds	Time, hours	Gas consumed, cubic ft.	Cubic feet of gas per pound	Stock forged diameter, ins.
1,265	3,200	10.5	12,350	3.84	1⅜
1,300	2,280	8.4	8,350	3.66	1¼

opening or closing the shutter by hand.

Operation of the furnace for many months on tubular stock gave the data shown in table I. These results represent typical operations, taken at random when the furnace was running. They do not represent tests, but merely normal operations of the furnace. The average load was about 1000 cubic feet of gas per hour and the general rate of running the stock was 15 pieces per minute. Delays during periods of the day reduce the hourly average of work, and during such periods the furnace would control on the automatic regulation, and the temperature would be maintained at the 2050-degree mark.

The representative operations of the furnace on solid bar stock taken at random several weeks apart over a 10-month period are also shown in table II. Temperatures ranged between 2200-2320 degrees Fahr. over the period. While it was known these temperatures were too high for the steel, they nevertheless were resisted by the company making the forgings; and no deteriorating affects were produced in the forgings. Fig. 1 shows the general design of the furnace in cross section. Fig. 2 gives some idea of the general external appearance of the furnace while operating on 1½-inch bar stock, heating 5 inches of the bar to 2260 degrees Fahr.

As stated previously, the multiple burner furnace has greater control and finer flexibility, than the uni or biburnered furnace. The flame at each firing point is not of sufficient size nor intensity to over heat the stock to the degree of burning, if the work is heated according to the heating cycle predetermined for the size of stock to be run. The multiple points of firing the furnace assure an evenly heated and uniformly heated chamber. Platnum-platinum-rhodium thermocouple with quartz tube was used and the tube was placed in the furnace level with the stock during operations and with the end of the tube an inch from the back wall. The following readings show the uniformity of temperature:

Right end of furnace	2320 degrees Fahr.
Center	2310 degrees Fahr.
Left end of furnace	2310 degrees Fahr.

The thermocouple was placed through the back of the furnace through back wall and 1 inch from front wall at center and gave a reading of 2320 degrees Fahr. This was not a forging temperature, but was taken at a high point, because it was felt that any difference in temperature would be more noticed at the high range than at the 2200 degree range.

The rate of heating the furnace may be understood from the data given for starting from a cold furnace, but not a new furnace. The inside of the furnace was about 75 degrees Fahr. and the setting had been in use several months, when these figures were obtained.

10:20 a. m.	Burners lighted. Furnace temperature inside	80 degrees Fahr.
10:41 a. m.		2000 degrees Fahr.
10:50 a. m.		2200 degrees Fahr.
10:56 a. m.		2300 degrees Fahr.
10:59 a. m.		2320 degrees Fahr.
11:25 a. m.		*2390 degrees Fahr.

*Furnace was empty and temperature went up without change in valve setting.

The furnace which was working on tubular stock was equipped with an automatic control and valve. The furnace working on bar stock was manually controlled and operated.

The refractory life of these furnaces has been remarkably good. One of the furnaces on tubular stock has had no repairs since it was built in June, 1927. The other furnace on bar stock has been repaired once, when a tile over the front cracked. It was 50 per cent rebuilt, front wall and burner blocks, and top burner blocks. The repairs to the tile were made 7 months after the furnace was built; and the front and roof repairs, when it was 50 per cent rebuilt, took place 3 months later, so that the furnace was about 52 per cent rebuilt in 10 months.

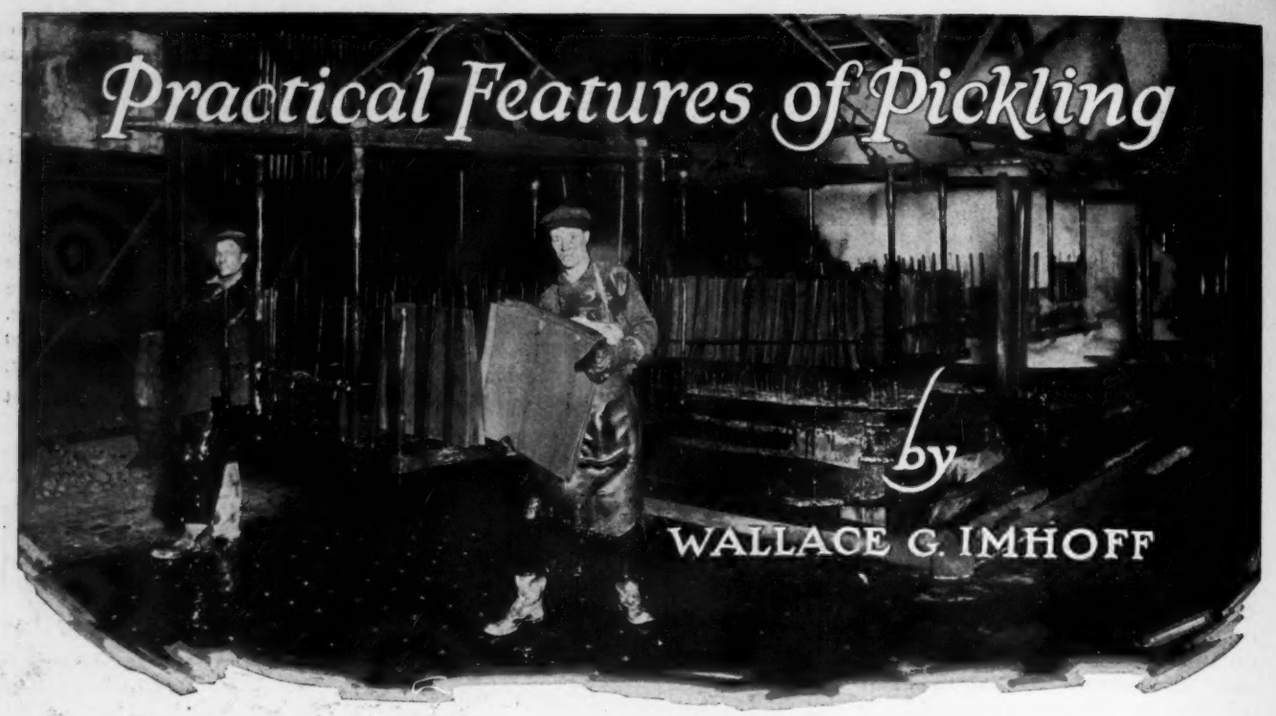
This furnace is not expensive in first cost, nor in any of the repairs necessary to its operation and maintenance. The first cost on this same size of furnace was under $800, including burners. The repairs cited were completed in 20 hours by a bricklayer and a helper, and with materials cost about $88. The life of the burner for the work which was done would be about one year, running the furnace at 2200 to 2250 degrees Fahr. The burner cost amounts to about 20 per cent of the total furnace cost.

Economy and ease in repairs must not be lost sight of in furnace design and construction. A complicated structure, requiring a number of special parts cannot be repaired quickly.

The fuel consumption on this furnace, under both operations of tube and solid stock, is in line with high-grade gas equipments for high-temperature work. The net energy utilization must be low, and will average about 27 per cent. This is nevertheless high for an operation at the temperature cited, 2250 degrees Fahr., but the method of firing must compensate for the otherwise low net utilization of the total heat energy of the gas. Improvements now are being made on this type of furnace.

Fig. 2—A side view of the gas-fired furnace designed for heating bar stock for upsetting work

Practical Features of Pickling



by WALLACE G. IMHOFF

Thirteenth Article—Pickling for Black Tinning, Tinning of Copper and Enameling

PICKLING steel for black tinning is a more delicate operation than pickling steel for galvanizing. As previously stated the fundamental secret of good galvanizing is to be found in thorough cleaning and pickling. In tinning, the foundation rests on thorough cleaning and pickling before the coating is applied.

Steel stampings usually are coated with a drawing compound, oil, or grease as they leave the dies and it is extremely important that these lubricants be removed before pickling. The steel articles should be placed in baskets and dipped in a boiling hot solution of a metal cleaner. One pound of cleaner will be sufficient for 25 to 50 pounds of steel. Articles with fresh, soft grease or oil on the surface are cleaned easily; on the other hand, grease that has dried is sometimes much harder to remove. It is economy therefore to clean the articles soon after they have been made. Two to five minutes in the boiling solution is often sufficient. On the other hand it may take from one-half to three-quarters of an hour, or even longer to remove old, hard, dried out grease and dirt.

The cleaning tank should be equipped with steam coils to maintain the cleaning solution at the boiling point. After the work has been cleaned thoroughly, the basket should be lifted out of the solution and lowered in a tank of boiling water.

The cleaning and pickling department should be arranged for straight line production, the tanks being set lengthwise, with an overhead I-beam, or monorail and carriage, and block and tackle to raise and lower the baskets in and out of the solutions. The block and tackle should have a hook on the lower end, and there should be at least two or three baskets for handling the work. The water rinse tank after cleaning also may be used for a storage tank.

THIS is the thirteenth and concluding article of a series on pickling processes written exclusively for IRON TRADE REVIEW. The first installment was presented in the Oct. 27, 1927, issue and subsequent articles appeared bimonthly. Subjects discussed included facts about the iron and steel base and iron oxides and scale; acid, bath and pickling time; steam, air and agitation; solutions, tanks and contamination; equipment, production principles and difficulties and remedies; compounds and inhibitors; fumes, ventilation and by-products; chemistry of pickling; design and construction of pickling tanks; and design of pickling departments.

From the water rinse tank the articles go into the pickling solution. The material can be handled in copper or acid-resisting metal baskets. Some articles are more easily handled by pickling on wires. The solution strength is usually 4 to 6 per cent, and the temperature 160 to 180 degrees Fahr. It is necessary to lift the wires, or draw out the baskets occasionally to examine the product, and turn or move the articles to free gases and allow the pickle to come in contact with every part of the steel. The articles should be subjected to the pickling solution until they are absolutely clean from all scale and oxide. Particular care also should be taken that the articles are not overpickled, or burned, because a rough, pitted surface will be rough after the work has been tinned.

From the pickling solution the articles go to a hot water wash and storage tank. It is important that no iron salts, or contamination of any kind be carried into the tinning flux. Hence, the storage tank is kept clean and the solution fresh. From the rinse tank the articles go into the fluxing solution. Too many articles should not be fluxed at once as a fresh solution produces a much cleaner and brighter tin coating. When the articles drain too long, or stand exposed to the action of the air the coating is more difficult to apply. Black spots and exposed steel

are developed under such conditions. The articles should be absolutely clean and have a fresh film of flux on them as they go into the tin pot.

Small castings should be first dipped in the boiling cleaning solution. If there is only a little oil or grease on the surface, a one to two minute dip will clean them sufficiently for the next step which is pickling. Castings are pickled best in a solution of hydrofluoric and muriatic acids. This solution is made up by using a bottle of hydrofluoric to a carboy of muriatic acid in about 120 gallons of water. The temperature of the solution is kept from 120 to 130 degrees Fahr. Pickling will be complete in one-half to one hour. From the pickling solution the articles go to the wash tank where they are stored until ready for tinning. From the water storage the articles are put in the fluxing solution and then into the tinning pot.

Large castings should be sand-blasted thoroughly before coming to the tinning department. All corners should be white and clean. Before placing the castings in the hydrofluoric acid solution they should be turned over and all loose sand removed to conserve the hydrofluoric acid. The castings can be placed in the tank with a hook, or with high rubber gauntlet gloves. The solution, made as previously described, is kept at about 130 degrees Fahr. The castings should be examined frequently to see that they are not overpickled. They should be clean in about three-quarters of an hour. The castings should be removed from the acid and stored in the water rinse tank until ready for use. Many coating failures occur at this step because the castings are allowed to corrode after pickling.

Where material is to be rough tinned only one tin pot is necessary, but when a clean, high finish is desired two pots should be used, a roughing kettle and a finishing kettle. The object of a roughing kettle is to give the articles a thorough coat of tin to prevent rusting. After they have been given a rough coat the articles may be stored until ready for finishing.

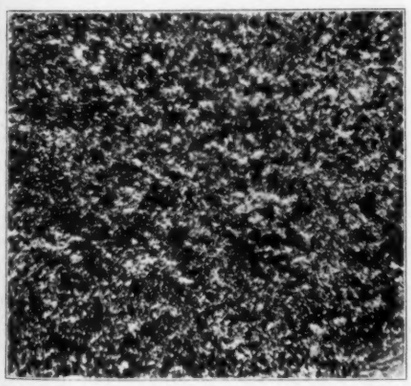


FIG. 32—SURFACE OF PICKLED AND ANNEALED STEEL BEFORE BEING PLACED IN THE PICKLING SOLUTION

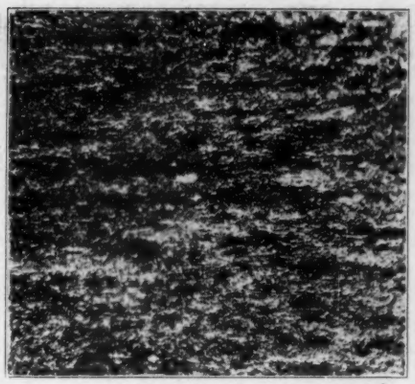


FIG. 33—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION ONE MINUTE

A considerable difference exists in the quality of tin. Soft tin gives the best coating; hard tins often make a good coating difficult to obtain. Careful heating of the bath, and skillful withdrawal of the articles should both be practiced. Tin melts at 449 degrees Fahr. The temperature of the metal should range between 520 and 540 degrees Fahr., but this depends largely on the size and class of work being tinned. A general rule is the heavier and larger the work, and the higher the production, the higher the temperature the tin bath should be. The metal should be held at as low a temperature as possible when tinning cast iron. However, it should not be so low as to give rough work or a heavy uneven coating. An electric recording pyrometer should be used because a large part of the trouble in the tin house is due to overheated metal.

Skill Is Involved

The tinning of copper is a delicate operation and requires the care and skill in pickling. Some articles made of copper are drawn or stamped and, hence, are covered with a heavy coating of drawing compound. The first operation, therefore, in pickling of copper is a cleaning operation to remove the drawing compound. This grease is easiest removed when it is soft and fresh.

Pickling copper for tinning is similar to pickling steel for tinning and the set up should be about the same. The work is handled in baskets hung on a hook attached to a block and tackle on an overhead monorail. The copper articles are first loaded into the basket and put into the boiling metal cleaner to remove any grease.

The cleaning solution should be kept at the boiling point and care should be taken that the copper articles are under the solution otherwise they will become black from oxidation. The articles should be entirely clean and free from grease in 30 to 45 minutes. The basket then is lowered into a boiling solution of clean rinse water. This should be followed by a dip in another warm rinse tank which also is used as a storage tank.

The solution used for pickling copper is nitric acid. Due to the heavy brown poisonous fumes given off this tank is made of cypress wood the same as for a sulphuric acid solution. The tank is lined with one course of vitreous acid-proof brick set in acid-proof cement. A small space is allowed for expansion between the brick and the tank wall. The brick are laid flat and carried flush with the top of the tank. No drain or outlet is put in this tank and the solution is not heated. The tank is emptied by filling a small piece of garden hose with water, placing one end in the nitric acid tank and then quickly lowering the other end into a drain. The whole tank is enclosed in a wooden hood built with a stack; steam is run into the hood when the tank is being operated to carry out the heavy brown fumes. A drain valve should be placed in the line to run off the condensed steam so as not to flood the acid solution. The valve is opened and the water drained off before the steam is turned into the stack. The nitric acid solution is made of one part acid and one part water if the scale is not too heavy. The articles are best handled with tongs made of an acid resisting alloy. Steel tongs last but a short time.

The basket containing the articles is removed from the water storage

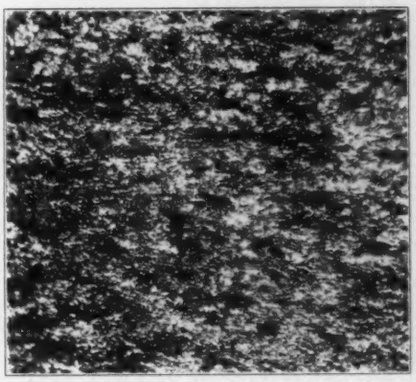


FIG. 34—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION TWO MINUTES

tank, held for an instant in the nitric acid pickle and then quickly plunged into a tank of clean warm rinse water. This water receives a large amount of acid carried over by the material and for extra precaution an additional cold water rinse dip should be available before dipping the copper articles in the tinning flux. This second water rinse also is used for storing the articles until ready to be coated.

The tinning of copper is not difficult if the pickling solutions are kept clean and fresh. Failure usually is caused by the cleaning solution being carried over into the nitric acid, or the nitric acid being carried over into the fluxing solution. Success is assured if the articles are washed carefully between each operation and the copper articles kept fully under the solutions at all times.

The temperature of the metal for tinning copper should range from 560

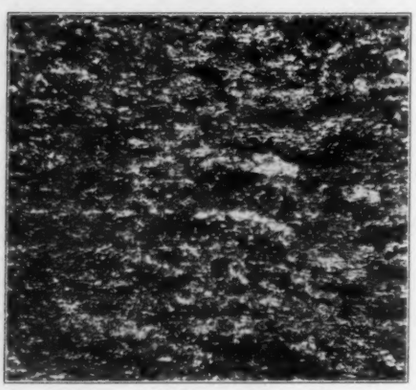


FIG. 35—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION THREE MINUTES

to 570 degrees Fahr. The pot should be heated uniformly and the temperature recorded by an electric pyrometer. Overheating of the metal is one of the most frequent causes of failure. A pure grade of soft tin should be used for coating copper. Hard tins tend to crystallize and show a flake. The tinned articles are immersed in a clean tank of kerosene oil, washed, and dried with middlings or sawdust, and then blown clean with an airblast.

Sheets for enameling usually are cold rolled, pickled to remove the heavy black scale, and annealed to relieve the rolling strains. They frequently are coated with a light red or blue oxide around the edges as a result of the annealing operation. This coating is ferric oxide of iron, Fe_2O_3, and is removed easily.

A large part of enameling is done on what is called hollow ware, that is pots, pans, kettles, tea pots, etc. The fabrication of these articles re-

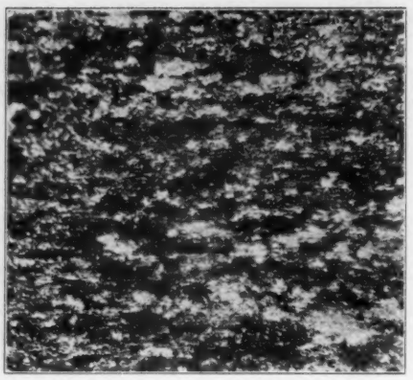


FIG. 36—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION FOUR MINUTES

quires deep drawing operation. Some of the ware is spun. The finished black articles are usually well covered with a drawing compound. Two methods of preparing sheet steel for pickling in the enamel industry are employed. The first is to scale or anneal everything before pickling; the second is to clean the articles with a metal cleaner. The usual practice in the enamel industry is to scale the material, because of the grease pressed into the pores of the steel. The articles either are dipped in a 7 per cent solution of muriatic acid, piled on a fork or rack and put into the furnace; or, they are carefully piled on a large bottom and sprayed with a 7 per cent muriatic acid solution by using an ordinary sprinkling can for that purpose. The temperature of the annealing furnace is kept between 1200 to 1300 degrees Fahr. The total time required for scaling is about seven minutes. The actual time in the furnace is about two minutes. The annealing furnace should be of the closed type with a soft yellow reducing flame which produces a soft, dull, red brown scale. This method of removing oil and grease is recommended for articles

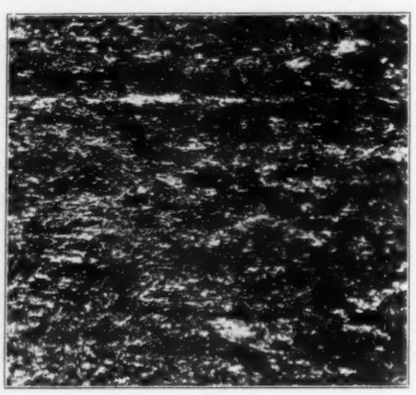


FIG. 37—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION FIVE MINUTES

such as cooking utensils where the oil and grease are pressed or spun into the pores of the steel base.

When it is possible to use a chemical cleaner the cleaning tank should be provided with steam coils to maintain the solution continually at the boiling point. In some instances the coils are placed on the sides of the tank and in others on the bottom. Most cleaners contain a large amount of caustic soda or caustic potash with other basic salts. The strength of the cleaner should be kept uniform for efficient operation.

From the cleaning solution the articles are next put into a tank of clean boiling rinse water. This washes off the strong alkaline solution and any dirt or grease carried over on the articles. The hot water also helps the articles to hold their heat before going into the pickling solution.

Following the rinsing the articles

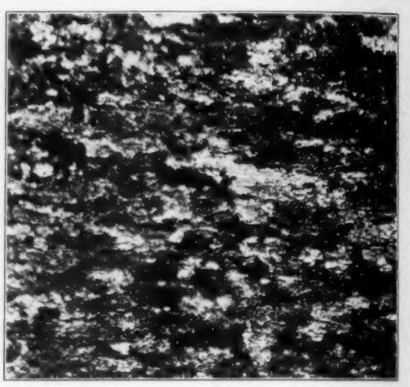


FIG. 38—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION EIGHT MINUTES

are ready to be pickled. Sulphuric acid generally is used for this purpose. The acid strength varies from 4 to 8 per cent and the pickling time from 40 to 60 minutes. The solution is held at a temperature varying from 150 to 170 degrees Fahr. After scaling, the articles also are ready to be pickled. An important feature in the pickling operations is to have a crate which will revolve and allow the acid to attack every part of the steel, or to have baskets or crates which can be raised easily and the articles turned. One of the duties of a good pickler is to see that no unpickled spots exist due to gas pockets. It is advisable to use small tanks to provide flexibility. In case any oil or grease get into the pickling solution, the tank can be emptied quickly, scrubbed and a new pickling solution made up. When the pickling solution reaches 6 to 8 per cent in ferrous sulphate it usually is emptied and a fresh solution made up. In some plants fer-

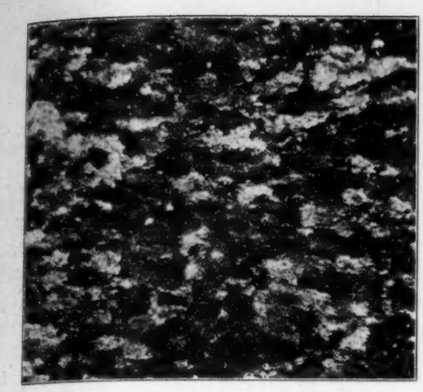


FIG. 39—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION 15 MINUTES

rous sulphide is put in the pickling tanks. It is claimed that the hydrogen sulphide gas generated is beneficial later in the burning process.

After pickling, the articles are rinsed thoroughly in fresh clean water to wash off any iron salts or acid carried out of the pickling tank. The neutralizing bath is kept from 0.3 to 0.4 per cent strength. It should not be made too strong as it will effect the dipping solution and cause trouble in the ground coat. If it is not strong enough the acid will not be entirely neutralized and corrosion and rusting will take place in drying. In some plants after pickling, the articles are immersed in a boiling solution of double nickel salts from 10 to 16 minutes. The articles receive a light nickel flashing which tends to fill up the pores and helps to overcome rusting during drying. Drying should be done as quickly as possible. The dryer should be hot and have plenty of air circulation to carry off the moisture ladened air.

The results of cleaning pickled and annealed steel in a 4 per cent sulphuric acid solution at 140 to 150 degrees Fahr. are shown in Figs. 32 to 41. This series of illustrations show the effect of pickling at various pickling times up to 40 minutes. Fig. 32 shows the steel base before being placed in the pickling solution. The steel has only a light oxide film which is removed after it has been in the pickling solution one minute. Fig. 33 shows the metallic skin on the steel which is not entirely pickled off until about eight minutes pickling time as seen in Fig. 38. The grain of the steel is seen plainly and the metallic skin is gone. Fig. 39 shows the steel after being in the pickling solution 15 minutes. Note how clearly the grain structure can be seen. Figs. 40 and 41 show the steel after being in the pickling solution 25 and 40 minutes time. The steel is badly burned or overpickled. Note how rough the surface is, and how the acid has attacked the grains and left deep ridges and furrows. These plates show clearly the results of overpickling, or burning enamel steel.

Installs Automatic Drive for Bar Mill Train

Recent improvements completed at the Keystone works of Henry Disston & Sons Inc. Tacony, Philadelphia, according to the *Disston Crucible*, include the electrification of the 9-inch bar mill and the installation of an electrically-driven centrifugal pump for factory water supply. Both of these installations are of rather novel design in that both are automatically controlled.

The nine-inch bar mill is driven by a direct-connected 500-horsepower motor, having variable speed characteristics from 155 to 500 revolutions per minute. The motor is controlled from outside the motor room by a "start and stop" push button and the speed changes are accomplished by means of a drum-type controller. Energy is supplied to the motor from a 700 kilovolt-ampere synchronous motor-generator set. This set is completely automatic and is started and stopped by a push buttom mounted alongside of the mill motor control. The motor-generator set is protected, automatically, by relays, from overload, reverse energy, low voltage, field failure, bearing failure, etc. It is also protected on the direct current side by a reclosing circuit breaker which will not permit the machine to be connected to the bus bars in case there is a short circuit or ground on the line to the mill motor.

The advantages accruing from such an installation are many. In the first place, variable speed allows the mill to be operated at maximum speeds for all sizes and shapes rolled, and 50 per cent longer billets can be handled, thereby increasing production. With automatic push button control no operator is required, as the boss roller can control the starting, stopping and speed changes without entering the motor room.

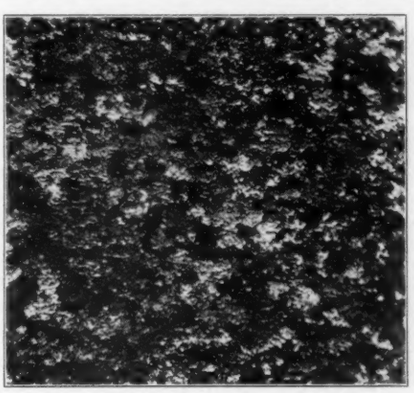


FIG. 40—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION 25 MINUTES

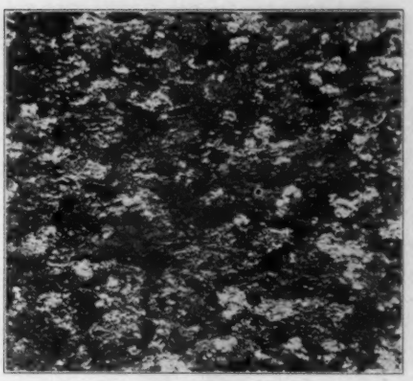


FIG. 41—SURFACE OF PICKLED AND ANNEALED STEEL AFTER BEING IN PICKLING SOLUTION 40 MINUTES

In addition to the foregoing advantages, the synchronous motor-generator set is capable of correcting power factor, as it is an 80 per cent leading power factor machine. This benefit overcomes any penalty from the central station company for poor power factor without the installation of additional corrective equipment.

About a year ago, it became necessary to replace one of the old steam pumps and it was decided to install an electrically-driven pump which could be automatically controlled. Such units had been operating in mine service but none had been installed in industrial plants, at least in the East.

A three-million gallon capacity pump driven by a 150-horsepower motor was installed in the basement of the powerhouse and connected to the existing water main. The suction line was installed to the powerhouse forebay on the river. A small priming pump driven by a 5-horsepower motor lifts the water in the suction line into the pump casing, at which time the main pump starts and the priming pump shuts down. The control of the entire unit is governed by a contact-making pressure regulator located at the water tower. When the height of water in the tower drops to the minimum predetermined level the pressure regulator closes the circuit controlling the priming pump which immediately starts. As soon as the water reaches an automatic valve connected to the pump casing it closes, starting the main pump motor and opening the circuit of the priming pump motor, thereby stopping it. When the water in the tower has reached the maximum height, the pressure regulator closes another circuit, which opens the main motor switch and shuts the pump down.

New Books Worth Reading

Late Developments in Cast Iron

Cast Iron in the Light of Recent Research, by William Herbert Hatfield; cloth, 340 pages, 6 x 9 inches; published by Charles Griffin & Co. Ltd., London, and supplied by IRON TRADE REVIEW, for $9, and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 16s.

In its third edition this work is revised and enlarged to keep pace with research. Larger attention is being paid to cast irons and much research was made between the second and third editions. Such a volume of this has offered that in this book it has been possible in some instances only to indicate where the data may be found. In essential matters all data of importance has been included.

The general plan is the same as in preceding editions, starting with the iron-carbon equilibrium diagram and a description of the nature and constitution of these alloys. Then the writer takes up the influence of other constituents. The remainder of the volume is devoted to consideration of the influences incidental to modes of manufacture, such as casting temperature, shrinkage and contraction and heat treatment.

The previous editions are well known and the present issue needs no introduction to those following developments in the manufacture of cast irons.

Abrasives in a Nutshell

Abrasive Handbook, by Fred B. Jacobs, cloth 560 pages, 6 x 9 inches, published by the Penton Publishing Co., Cleveland, and furnished by IRON TRADE REVIEW for $5 postpaid and in Europe by the Penton Publishing Co., Ltd., Caxton House, London, for 25s net.

The entire abrasive industry represents a slow development of some 30 years, followed by more rapid progress during the past 20 years. With the steady advancement of the industry, rule-of-thumb methods gradually were replaced by scientific practices so that today the industry is a recognized branch of modern engineering.

While much has been written in times past pertaining to abrasives and abrasive machinery, the industry has been without a handbook. Engineering handbooks furnish a few scant pages wherein certain fundamental principles are given, but when the abrasive engineer, superintendent, grinding room foreman, or grinding room machine operator desires information on specific subjects he is confronted with the problem of making an extensive research through files of technical magazines and often without satisfactory results.

This state of affairs prompted the author some 15 years ago to begin the compilation of abrasive data. Various items pertaining to abrasive practice were collected, filed, and indexed, and the result is the Abrasive Handbook. In selecting the material for this work, care was exercised to make sure that all information was authentic and up to date.

The book is divided into 14 sections, which greatly assists ready reference. These sections are as follows: Abrasive Materials, Abrasive Paper and Cloth, Abrasive Producers, Cylindrical Grinding, Diamond Data, Disk Grinding, Grinding Machines, Grinding Practice, Grinding Wheels, Honing Practice, Miscellaneous Abrasive Data, Miscellaneous Abrasive Operations, Polishing and Buffing, and the Safe Operation of Wheels.

As a reference work for works managers, chief engineers, designers, abrasive engineers, grinding room foremen, and grinding machine operators, this book will fill a long felt want. It stands by itself as being the only work of its kind ever published.

Metals in Tabulations

Metal Statistics, 1928; cloth; 552 pages, 4 x 6 inches; published by American Metal Market and Supplied by IRON TRADE REVIEW for $1, postpaid, and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 5 shillings, net.

In its twenty-first edition this volume presents the same assortment of figures as in the past, with several new tables, to add to the information which may be needed by those dealing with metals. The volume is uniform with preceding years and the style of presenting figures is unchanged.

Iron, steel and nonferrous metals are covered, as to production and price. Other statistics are included, such as cement production, commodity price relatives, foreign commerce, freight car loadings, rates of foreign exchange and similar matters.

Foundry Practice for Schools

Foundry Work, by R. E. Wendt; second edition; cloth, 236 pages, 4¾ x 7½ inches; published by McGraw-Hill Book Co. Inc., and supplied by IRON TRADE REVIEW for $2, postpaid, and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 10s, net.

The first edition of this text was used several years in teaching and the second presents the subject matter reorganized. A number of new principles and illustrations have been added. The subject is divided into four parts. The first takes up fundamental principles of castings manufacture; the second presents exercises in bench and floor molding; molding machines and other mechanical aids are described; principles of core making are explained. In the third part furnaces, melting, metal mixtures and cleaning of castings are presented. The fourth section deals with the problems of the foundry executive.

Each chapter is followed by questions by which the pupil can test his knowledge of the preceding text. Adequate illustrations convey what has been told in the text.

Who's Who in Business

Poor's Register of Directors of the United States, first annual edition, 1928; 1698 pages, 9 x 13 inches; published by Poor's Printing Co., and supplied by IRON TRADE REVIEW for $30, postpaid, and in Europe by Penton Publishing Co., Caxton House London, for £7 10s, net.

A cross section of the management of the nation's business affairs is presented in this directory of directors. It is in two sections, presenting first names and addresses geographically under states and cities, then alphabetically by name, with business connections. The publishers state every listing was obtained direct from the individual, feeling that no man should be listed without his approval. Failing to obtain his sanction the publishers did not include his name, even though he might be of national prominence and his affiliations generally known.

It is planned to enlarge the register to include 100,000 listings, it being

believed this would no more than cover the business leaders of the country.

An addendum covers listings received too late for insertion in their regular order, and notes recent additions to or eliminations from the listings in the text proper.

Uses possible to be made of this publication are numerous and will suggest themselves to those seeking a list of men of prominence in business. It is planned to make it an annual publication.

Who and What in Waste Trades

Fifteenth Anniversary Blue Book, by the National Association of Waste Material Dealers Inc., New York; leather, 324 pages, 6 x 9 inches; published by the association and supplied by IRON TRADE REVIEW for $5 postpaid.

The first edition of this publication was printed five years ago. Growth and changes made a second issue necessary and the anniversary year seemed appropriate for its appearance. The contents include the association's constitution and bylaws, rules for arbitration, trade customs, list of members, a division on iron and steel scrap and old metals, and others on rubber, wool and cotton. In the metals section the standard classification is printed in parallel columns in English, French and German to meet needs of foreign-language members. Recommendations of the department of commerce as to simplified practice and classification and the classification of the American Railway association are included.

Plans Second Steel and Power Exposition

Announcement is made that Canada's Steel and Power show will be held at the University of Toronto Arena, Toronto, Ont., Sept. 4-7. This is the second exposition of this kind to be conducted in the dominion, the first taking place last year in the same city. In 1927 exhibitors numbered 110, but this year provision has been made for 140 and more definite co-operation will be given exhibitors. Already 51 reservations for space have been made.

A corporation has been created to conduct this year's show without purpose of gain for its members. Organizations co-operating again will be the Canadian section of the American Welding society; Engineers' Mutual Benefit fund; Canadian Engineering Standards association; Industrial Accident Prevention associations; and Montreal chapter of the American Society for Steel Treating. Robert McLaren, 160 Dovercourt road, Toronto, is president of the 1928 show and Campbell Bradshaw, 24 Front street West, Toronto, is secretary.

Plan World Engineering Congress in Japan

The program of the first World congress of engineers, to be held next year in Tokio, Japan, was outlined in a cablegram received by Maurice Holland, New York, executive secretary of the American committee of the congress, from Baron C. Shiba, vice president of the congress. The meeting will convene in Tokio Oct. 30, 1929, and the official languages will be English and Japanese. The first week will be devoted to technical papers and social meetings, the second week to inspection trips in Tokio and vicinity, and the next fortnight to trips throughout Japan in the industrial and engineering centers. Eighty American engineers and scientists have accepted membership on the American committee under the honorary chairmanship of Secretary of Commerce Herbert Hoover and the active chairmanship of Dr. Elmer A. Sperry, Sperry Gyroscope Co., Brooklyn.

Rolls-Royce Equipment Self-Contained

(*Concluded from Page* 1203)

the work handled in this department. Because the department turns out parts for only nine cars a week it must not be supposed that the amount of grinding is in any sense meager. In each of the nine cars produced more than 1000 parts are ground. Some of these parts have four and five grinding operations and the average is above two. Consequently for the nine cars a week this means more than 18,000 distinct grinding operations handled in the grinding department each week. In this department, not only are the men trained so that they may be quickly switched from one machine to another, but the jigs and fixtures have been carefully designed so that one tool may be quickly transferred from one job to another job. There are probably few grinding departments in the country outside of jobbing grinding shops, where the tools are used on such a variety of work.

Fig. 5 shows the grinding of wrist pins. For this, a pin wheel-like fixture is used containing a lot of radial slots into each of which a pin to be ground is introduced. The upper and lower disks revolve in opposite direction and thus finish the wrist pins within narrow limits of uniformity. By the use of another fixture this machine is quickly transferred from wrist pins to valve plunger pins and much other work of a similar nature.

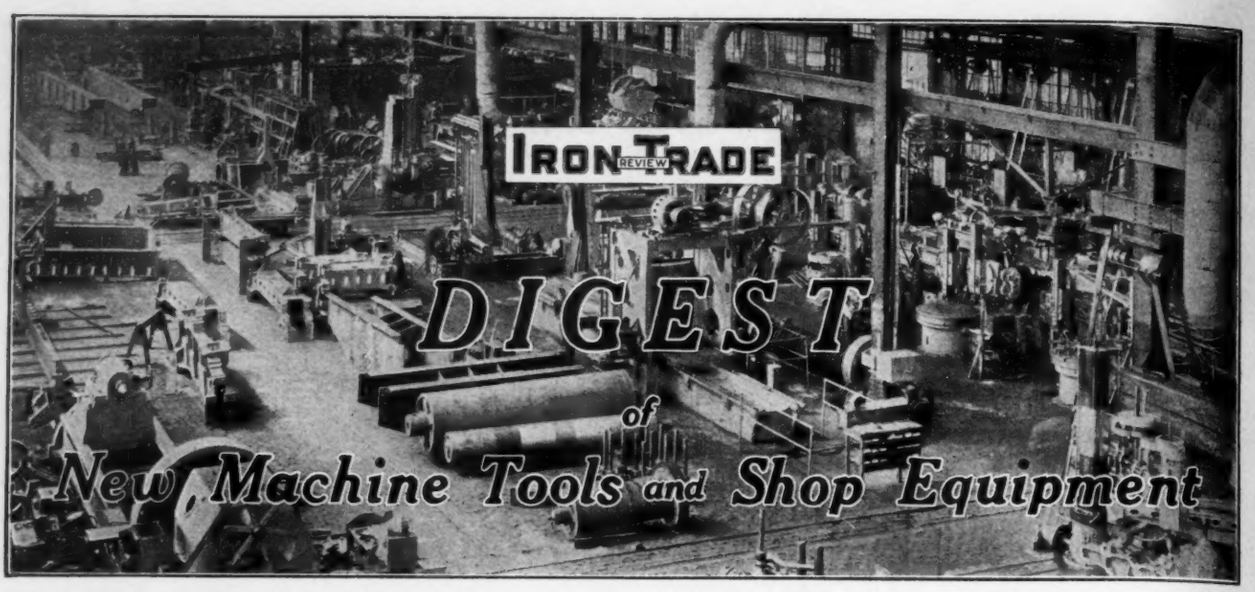
Many of the grinding operations take on unusual interest because of the extreme accuracy specified. Where many grinding shops stop their work the Rolls-Royce shop may almost be said to start. Thus, in finishing the cylinder after the first grinding, three other grinding operations follow. These are mechanical and hand lapping operations. Arkansas stone sifted through silk and then mixed with oil forms one of the chief abrasive agents in producing the high polish and accurate dimensions required in Rolls-Royce automobile construction. Elaborate lapping machines are busy all day long putting the finishing touches on already accurately ground steel parts.

Special machines have invaded the field of lapping to a remarkable degree during the last eight or ten years. Nearly all of the operations at the Rolls-Royce plant, even where extreme accuracy is required, have been put into the automatic or semi-automatic class by the design and construction of much special machinery. Worm gear trains are "worked in" on machines which exactly reproduce operating conditions as to pressure and speed.

Sets Building Record

Erection of steel frame buildings in Chicago has been accomplished with celerity in the past, but what is claimed as a record was completed when the Lawyers building, 100 North LaSalle street, was built in 36 working days. The building is 25 stories in height and involved 1958 tons of structural steel which was fabricated by the Gage Structural Steel Co., Chicago, and erected by the Overland Construction Co., that city. Inland Steel Co., Chicago, furnished the steel sections and Lundoff-Bicknell Co., Cleveland, was general contractor. Accurate fabrication and prompt delivery were commended by the builders as an important factor in effecting the new record.

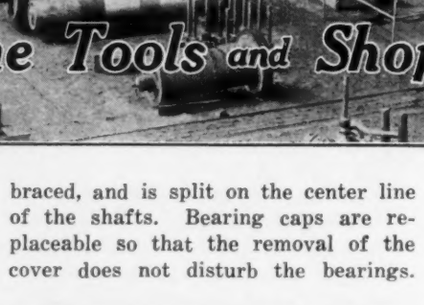
Sales of magnesium produced in the United States in 1927 totaled 366,400 pounds valued at $441,700, against 322,650 pounds valued at $390,400 in 1926, states the federal bureau of mines.



Announces Line of Gear Speed Reducers

ITR No. 115

Palmer-Bee Co., Detroit, has developed a line of speed reducers which feature smooth noiseless operation free from shock and backlash as a result of multiple gear contact and maximum rolling action. The gear teeth are of the Sykes continuous herringbone type. One of the reducers with top cover removed is shown in the accompanying illustration. Small size gears are cut from steel forgings and the larger ones from annealed electric steel castings. Pinions are cut from alloy steel forgings. All bearings are fitted with replaceable phosphor bronze bushings and all shafts are cut from alloy steel turned and ground to size. The casing is of cast iron, strongly ribbed and braced, and is split on the center line of the shafts. Bearing caps are replaceable so that the removal of the cover does not disturb the bearings.



No. 115—*Herringbone Speed Reducer*

Lubrication is by means of an oil bath, splash and gravity feed system, thus dispensing with external grease or oil cups.

Automatic Brake Permits Push Button Control

ITR No. 116

General Electric Co., Schenectady, N. Y., has developed an automatic brake for use with its super-synchronous motors, eliminating the necessity for manual braking of the rotating stator. The super-synchronous motor on which this brake is used is designed for driving loads where synchronous motors can be used advantageously, where loads require more than full load torque before synchronism is reached and on which it is desired to limit the power demand during the starting period to approximately full load values. Typical applications are centrifugal and other pumps where by-pass connections are omitted; air compressors where unloading valves are omitted;

Iron Trade Review's Calendar of New Equipment

No.	Item	Builder	Comment	Date Described
93.	Across-the-line motor starter	Cutler-Hammer Mfg. Co.	Alternating current; gives full protection	April 12
94.	Magnetic switch	General Electric Co.	Places squirrel-cage motors across line	April 12
95.	Brinell testing machine	Brown Bayley's Steel Works Ltd.	Portable; operates on new principle	April 12
96.	Electric solenoid brakes	General Electric Co.	Models for alternating and direct-current	April 12
97.	Manhole cover	United Filters Corp.	Incorporates locking device	April 12
98.	Automatic rod magazine	Brown & Sharpe Mfg. Co.	Feeding device for automatic screw machines	April 19
99.	Portable conveyor	Link-Belt Co.	Light-weight; motor-driven	April 19
100.	Combination bench machine	Niagara Machine & Tool Works	Turns, wires and burrs sheet metal	April 19
101.	Portable electric tools	Hisey-Wolf Machine Co.	Two drills and bench grinder	April 19
102.	Packing cutter	Chickasaw Machine & Foundry Co.	Cuts fibrous packing to exact fit	April 19
103.	Gear cutting machine	Brown & Sharpe Mfg. Co.	Automatic; redesigned; more productive	April 26
104.	Board drop hammer rolls	Chambersburg Engineering Co.	Roller bearing; increases board life	April 26
105.	Automatic drilling machine	Hammond Mfg. Co.	Six-spindle; drills cap screw heads	April 26
106.	Hand belt surfacing machine	Porter-Cable Machine Co.	Larger size; for wood or metal	May 3
107.	Turret lathe cross slide	Warner & Swasey Co.	Compound type for taper work	May 3
108.	Multiple molding machine	Tabor Mfg. Co.	For standard split pattern practice	May 3
109.	Storage battery lift truck	Lakewood Engineering Co.	For handling cable reels	May 3
110.	Jig boring machine	Pratt & Whitney Co.	Small size for precision work	May 3
111.	Pneumatic press	Hanna Engineering Works	High-speed, vertical	May 3
112.	Hand nibbling machine	National Machine Tool Co.	Cut sheets metal in irregular shapes	May 3
113.	Grinding machine	Kling Bros. Engineering Works	High-speed, double-end heavy-duty	May 3
114.	Motor starters	General Electric Co.	Direct-current, general purpose use	May 3
115.	Speed reducers	Palmer-Bee Co.	Simple design; herringbone type	May 10
116.	Automatic brake	General Electric Co.	For super-synchronous motors	May 10
117.	Welding and cutting torch	Alexander Milburn Co.	Utilizes same tip for both	May 10
118.	Air compressor	Ingersoll-Rand Co.	Portable; smaller size	May 10
119.	Press brake	Cincinnati Shaper Co.	All-steel construction; larger size	May 10
120.	Knife switches	Westinghouse Electric & Mfg. Co.	Back-of-board type	May 10

vacuum pumps; mine fans and other large blowers; crushing, grinding and pulverizing machinery; machines characterized by heavy flywheel effects and machines difficult to start when stopped loaded. With the automatic brake just designed, hand operation is eliminated. The motor may be controlled by push button.

New Torch Welds or Cuts with Same Tip

No. 117

Alexander Milburn Co., 1416 West Baltimore street, Baltimore, is introducing a combination welding and cutting torch which can be changed from one operation to the other without changing the tip. A convertible feature changes the tip from welding to cutting and vice versa by a turn of the tip. In one position the gases are automatically passed through the pre-heating gas passages while the high pressure oxygen is carried through the central hole for cutting. In the next position, made by a quarter turn of the tip, the cutting oxygen is cut off and the welding gases are conveyed through the central passage of the cutting tip. Standard principles featured in all torches made by this company are retained in the new apparatus.

Building Air Compressor in Smaller Size

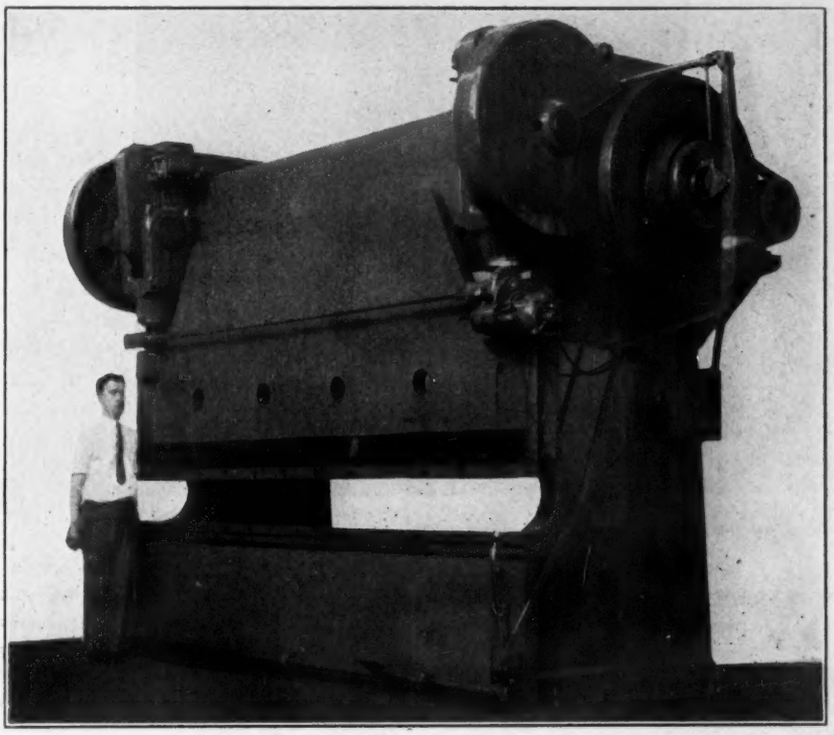
No. 118

Ingersoll-Rand Co., 11 Broadway, New York, has added a seventh size to its line of portable air compressors, the new size having a 4¾-inch bore, a 4-inch stroke and a piston displacement of 82 cubic feet per minute. The machine is equipped with a 4-cylinder tractor-type gasoline engine and is available on broad-faced steel wheels, on steel wheels with rubber tires, on trailer mounting, for automobile truck mounting, or without running gear for mounting on skids. The new size includes all features in other machines of the same line.

Press Brake Housings of Single Plate Type

No. 119

Cincinnati Shaper Co., Elam street and Garrard avenue, Cincinnati, announces the design of an all-steel press brake which has capacity to make right-angle bends at one stroke in ⅜-inch steel plate, 8 feet long, over a 3-inch die opening; or ¼-inch steel, 12 feet long, over a 2-inch die opening. This machine, as shown in the accompanying illustration, differs from previous models in that the housings are made of single plate 4¼ inches thick instead of double plate box construction. Bed and ram plates are 3 inches thick, with the bed extending below the floor line from 18 to 28 inches, depending upon the length of the machine. Due to the method of mounting the bed and the divided connecting rod, the loads are carried directly up and down the center line of the housings. Other refinements include: Automatic oiling, antifriction bearings on high-speed shafts and in the mounting of the flywheel, special disk clutch, oversize brake drum, liberal depth of bed and ram plates, and screw of high-carbon high nickel steel cut with buttress thread. The ram is raised and lowered with an independent motor drive. Standard machine lengths range from 6½ feet between housings with a die surface of 8 feet to 12½ feet between housings with a die surface of 14 feet.



No. 119—All-steel press brake of single plate construction

Knife Switches Mounted Back of Board

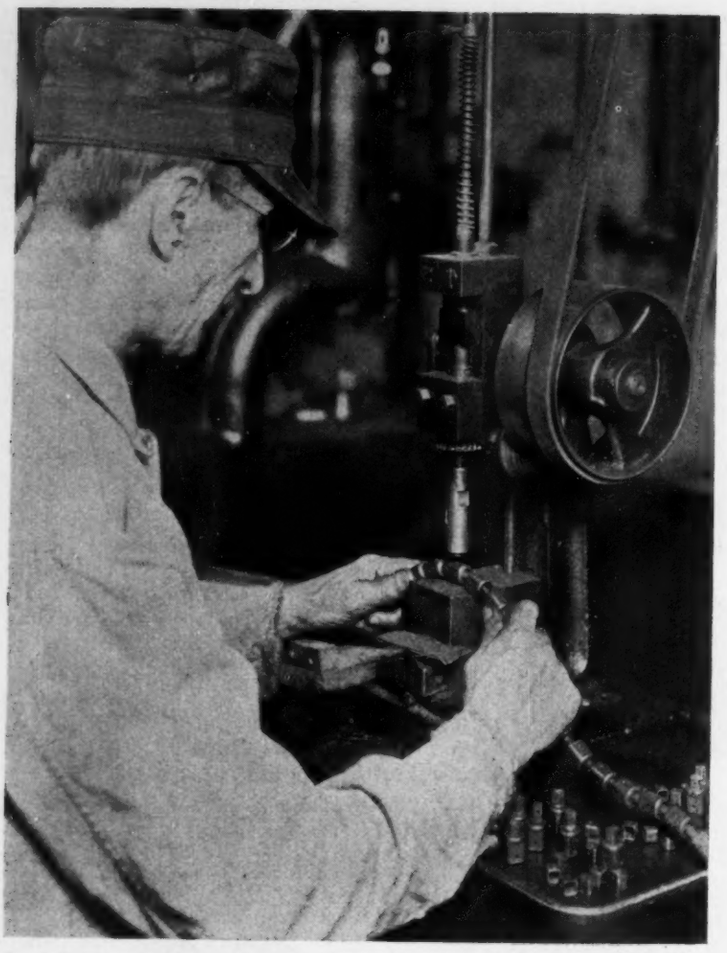
No. 120

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is placing on the market a new line of back-of-board knife switches to provide greater safety in switching operations of the low-voltage class. These switches are mounted on steel panels of the dead-front type and are particularly adapted for industrial control and central station auxiliaries. Each switch and its operating mechanism is mounted on a slate base behind the steel panel with only the operating handle passing through the panel. They are made for 250 volts direct current and 500 volts alternating current and for capacities ranging from 30 to 800 amperes. They can be obtained in one, two, three, or four-pole units, fused or unfused, and with or without quick break attachments. The switches are easily accessible.

Accident Frequency Rate Decreases 19 Per Cent

A summary of 1927 accident reports of 2089 industrial establishments shows a combined frequency rate 19 per cent lower than that for 1725 establishments reporting in 1926. The severity rate was reduced 25 per cent of the 1,565,000 workers employed in 1927 one in every group of 17 suffered a lost-time accident, while there was one fatal accident for every 154 nonfatal lost-time accident. These statistics were compiled by the National Safety council, Chicago.

Motch & Merryweather Machinery Co. has moved its Pittsburgh offices from 130 Seventh street to 1315 Clark building.



Making universal shafting. This type includes three parts, a barrel, toggle and sleeve

LARGE USES of STEEL in SMALL WAYS

Universal Shafting

WHEN castings or other metal parts which are to be ground are too heavy or bulky to be moved, portable grinding wheels of one type or another are frequently used. A familiar type has the motor mounted on a little cart and has the grinding wheel attached to this motor by some form of flexible shaft. For small grinding wheels and light loads, the coiled wire spring flexible shaft is used. This kind of shafting was described early in this series of large uses of steel in small ways. Such shafting is not serviceable when the power to be transmitted gets above certain limits.

For these higher powered drives a new form of shafting has been developed which is called universal shafting. It takes its name from the fact that it is made up of a series of universal joints. Such a chain of these joints when inserted in a flexible metallic tube becomes a serviceable shaft capable of transmitting several horsepower, even in the smaller sizes and capable also of being bent or curved to an angle of 180 degrees with a comparatively small radius.

This shafting is made by several manufacturers using different designs of universal joints. Some designs use steel forgings and others steel stampings. For the heavy duty shaft, the various parts are carefully heat treated. The shafting shown in the illustration is from a patented design and is made of three parts, a barrel, a toggle, and a sleeve. The barrel and toggle are automatic screw machine products. The sleeves are made on punch presses. The toggle which has a knob or larger section at one end fits through the barrel but is prevented from passing clear through by the knob. The sleeve and smaller end of the toggle then fits into the open end of the next barrel and these are joined by a pin which is riveted through the whole assembly. This form of shafting is used on a great variety of portable tools and is also used on machinery where power is to be transmitted to movable parts.

One manufacturer uses 450 tons of high carbon steel for the manufacture of this universal shafting each year and he estimates that the total production is at least three times this amount.

THIS is the one-hundred fifteenth of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the American tonnage.

Among articles appearing every two weeks and not included in Vol. I containing 51 separate descriptions are:

Vacuum Bottles	*Suspenders*
Highway Guards	*Screw Hooks*
Numbering Machines	*Steel Bridging*
Joist Hangers	*Mail Boxes*
Straight Razors	*Steel Shelving*
Piano Wire	*Automobile Bumpers*
Type Molds	*Tire Chains*
Swords	*Bathroom Fixtures*
Paving Guards	*Snow Fences*
Reaction Kettles	*Stairs*
Fire Screens	*Cork Screws*
Voting Machines	

Mines Are Mechanized

Mechanization of bituminous coal mines in the United States has progressed to the point where in 1926 a total of 10,022,195 net tons of bituminous coal was loaded mechanically by 455 machines in 131 mines, states the federal bureau of mines. In 1925 only 6,243,104 tons was loaded mechanically. In 13 of the 131 mines using mechanical loaders in 1926, more than 90 per cent of the mine output was so handled.

Birmingham Machine & Foundry Co., Birmingham, Ala., has booked three orders for cane crushing machinery for Louisiana.

Editorials

Sellers Should Emulate Buyers

LAST week a group of manufacturers, sales managers, purchasing agents and business paper editors met in New York to discuss the present price situation. Strange as it may seem, the conference was sponsored—not by sellers complaining of prevalent trade practices—but by the National Association of Purchasing Agents, whose officers desired to find out if its members can help remedy existing conditions.

The report of the conference, which appears on page 1242 of this issue, shows that those attending the meeting do not consider reputable purchasing agents responsible for "price cutting." While numerous instances of bid juggling and other objectionable tactics on the part of purchasing agents were cited, it was freely admitted that the seller is equally culpable of unethical practices. As for beating down prices, it was felt that salesmen are more at fault than purchasing agents.

Sponsors of the conference hope that the thought developed by the discussion may be crystallized and employed to good advantage in stimulating further consideration of the problem among the leaders of various industrial groups. It is believed that a thorough airing of policies of buying and selling, as applied to each important class of goods and services, would help.

However, one cannot help but reflect that the situation would be much improved if the salesmen of industry were organized as effectively as the purchasing agents. The National Association of Purchasing Agents has helped elevate the profession of purchasing to one of importance and dignity. Its act in calling the conference indicates the strong feeling of responsibility which it possesses. It is certain that if the constructive thought of reputable salesmen could be crystallized through the medium of a national organization—as that of the purchasers has been—the present problem of conflicting policies would be infinitely nearer solution.

Steel Again Sets a Record

SAVE for the fact that April had only 25 working days, total output of open-hearth and bessemer steel ingots would have established a new high. As matters stand, three other months have shown higher total outputs, but average daily production did constitute a new all-time record. According to the American Iron and Steel institute, the daily rate for April was 172,103 gross tons, and this compared with the previous high mark of 167,973 tons in March, 1927, shows an increase of 4130 tons per day, or 2.46 per cent.

In the first four months of 1928 a production rate of 163,560 tons per day has been attained, the best rate for any four consecutive months in history. For the corresponding period of 1927 the rate was 157,908 tons. Forecasts for the year at this early date are difficult, but if the dizzy pace continues a month or two longer 1928 appears headed for another record.

Ingots Sensitive to Buying Mood

PRODUCTION of steel ingots and castings in 1927 dropped 6.96 per cent from the all-time record established in 1926, according to official statistics of the American Iron and Steel institute reported in detail in this issue of IRON TRADE REVIEW. Ingots alone declined 6.74 per cent, whereas castings, constituting a much smaller tonnage than ingots, shrank 14.69 per cent and confirmed the unsatisfactory status of the steel foundry industry last year.

Finished material, including all kinds of rolled iron and steel, was 7.37 per cent less than in 1926. It is evident, therefore, that the shrinkage of rolled products was slightly more severe than was the case with ingots and castings.

As might be expected, certain products suffered more than others, principally through lack of demand in various fields and growing needs in others. Railroad buying was restricted in 1927 and rails dropped 12.8 per cent; automobile production contracted and merchant bars fell 11 per cent; fewer freight cars were built and plates and sheets declined 8.55 per cent. On the other hand, reductions in the building trade were less sharp and structural steel was lower by only 4.33 per cent, while concrete bars registered a negligible gain and galvanized sheets were smaller by only 0.235 per cent.

Investment Free from Paternalism

HOWEVER kind and generous an employer may be in helping his employes his motives at some time may be subject to suspicion, even from those receiving the benefits. For this reason many employers long ago discouraged the use of the word "welfare" in de-

scriptions of their work and plans. "Welfare" suggests paternalism, giving the employe something to which he is not justly entitled, and paternalism has been criticized by all factors.

The latest survey by the National Industrial Conference board showing there are 1,000,000 employes in the United States owning or paying for $1,000,000,000 worth of securities of the companies by which they are employed, strongly suggests that industry has found a way of helping employes, free from any suggestion or stigma of paternalism. It is a plan which cannot be referred to as "bait"; it is a matter of equality, share and share alike, "give and take."

As to the benefits derived from employe stock participation, the first undoubtedly is to encourage the employe to save his money by investment. The second is to give him a broader understanding of his relation to his employer; he begins to appreciate the fact that his employer has a problem; he is less inclined to "shake-down" his employer for more wages or salary when he realizes that on his capital of $500 "tied up in the company" a good rate of earnings is only $30 to $50 a year. It gives him a sense of proportion, and a perspective he could not otherwise obtain.

As to making him work harder, longer hours or more diligently, the $30 or $50 a year could scarcely be expected to have that general effect. His proportion is so small that it loses force as an incentive except perhaps to make him avoid unnecessary waste. Nevertheless, it gives him a sense of some importance in his organization, it encourages steadiness and thrift, and it inspires an understanding, co-operative spirit. A plan that accomplishes this, free from paternalism, cannot fail to win; it may eventually make all wage earners and salaried people "investors."

What Our Readers Are Thinking

Parts Makers' Competition Too Keen

To the Editor:

WE WISH to express our appreciation and favorable comment on the article appearing in your issue of April 5, written by J. W. Hill under the heading "Motor Car Companies' Profits Are Many Times Those of Suppliers." This article is certainly a very graphic picture of the strenuous conditions that exist in many industries allied to automobile production.

There are literally hundreds of automobile parts and accessory manufacturers who have grown up with the automotive industry, who during the earlier years enabled the automobile manufacturers to build up a volume of production to high peaks that would have been absolutely impossible had it not been for these parts manufacturers. Gradually the automobile manufacturer has equipped his own plant with foundry, forging, stamping and screw machine equipment, taking part of this business away from the specialized manufacturer and leaving a large surplus production in these fields, thus creating a highly competitive situation. This enables the automobile builder to play the prices of one manufacturer against another until he gets prices down to a point which he knows is below the actual cost.

As a typical instance in our own experience, an automobile manufacturer having a well established product had been building up a stamping equipment in its own plant, but for several years we have handled the most difficult, highly technical work which it has designed on its car. During earlier years it was willing to recognize the engineering skill required in producing these difficult stampings, and in case it was necessary for us to add additional operations to produce these parts we were able to get an increase in price to cover our increased costs. This company has always acknowledged that we have given them high-class dependable service, and has recognized us as a dependable source of supply.

During the last two or three years as competition has become more intense we have found it necessary to repeatedly revise quotations which we have placed with the company until our prices have reached a very close margin. Upon completion of a contract which totaled approximately $60,000 on which we had actually lost approximately $3500 we went to a representative of the company, showed him our cost figure of material, labor, and overhead, and suggested that if he was not satisfied that these figures were fair that we would be glad to have him send an auditor or cost accountant to our plant to analyze our conditions and determine whether these costs were excessive. We insisted, however, that in view of our experience on the last contract we simply must have an increase in price to give us a fair and legitimate profit. He frankly admitted that he was not interested in whether or not we were losing money that he could purchase this material from other sources at the price at which we had been furnishing, but owing to the fact that our service and quality of work had been very satisfactory he was willing to give us a preference in case we cared to take the business at the old prices. However, his instructions were to purchase material at the lowest price and the business must be placed on that basis.

From investigations which we have made from time to time we are satisfied that overhead costs in the plants of many of the small parts manufacturers are considerably less than those in the larger automobile plants, yet many of the latter are expecting the parts manufacturers to continue to take on this business below the cost of production knowing that their sources of supply are actually losing money on every order which they accept. In our plant which is well financed and working with a surplus that has been built up over a 15-year period our profits last year on parts made for the automobile industry was less than 3 per cent. We are satisfied that the capital investment of hundred of small parts manufacturers if liquidated and placed on deposit in a savings bank would earn more than is being earned in operation.

We quite agree with Mr. Hill in his contention that if the automobile manufacturer continues to find a market for his product there must be an adjustment of this situation, as the average small manufacturer must make his profit if the balance in trade is to be maintained.

PARTS MANUFACTURER.

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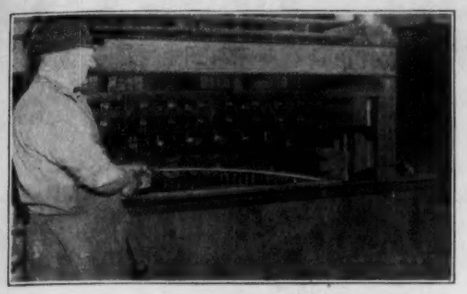

How Rolls-Royce Controls Production. Page 1201.

THE report on page 1242 of the conference of manufacturers, sales managers, purchasing agents and representatives of the business press, in New York last week, shows the mutual relationship between buyers and sellers. Buyers cannot force down prices below economic levels without suffering a reaction, because they in turn are sellers, and in the end defeat their own purpose. The scales must be reasonably balanced. The conference indicates both factors are coming to understand that their problem is practically the same, and discussion will prove beneficial to both.

The Readers' Page

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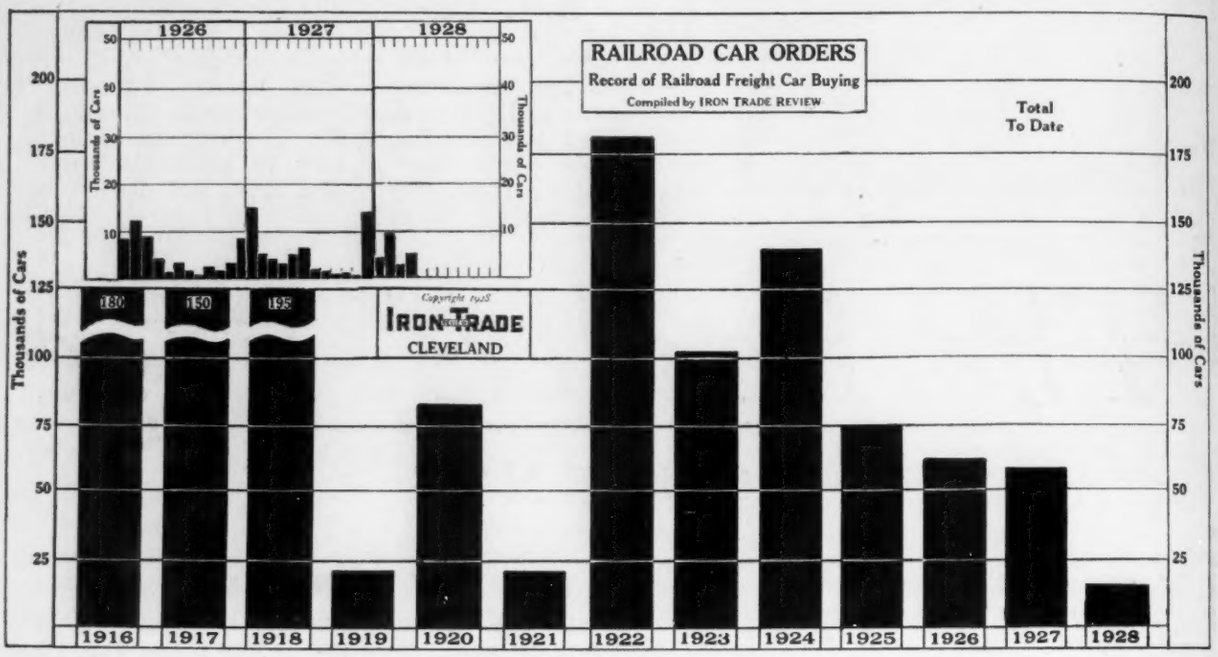
The Business Trend



Freight Car Buying Improves

By JOHN W. HILL, Financial Editor

DURING April the railroads purchased more freight cars than in any other month of the year with the exception of February. The estimated total for the period was 5585 cars compared with 2698 in March and with 3675 in April, 1927. The total for the first four months was 22,145 cars, compared with 29,300 in the corresponding period of last year.

PRESENT prospects are that the improvement noted in April will continue manifest during the second quarter, and the purchases during the first half of the year may at least equal those for the first six months of 1927. In the first week of the month orders for as many as 2500 freight cars were pending and additional business is in the offing and is expected to develop in the current month.

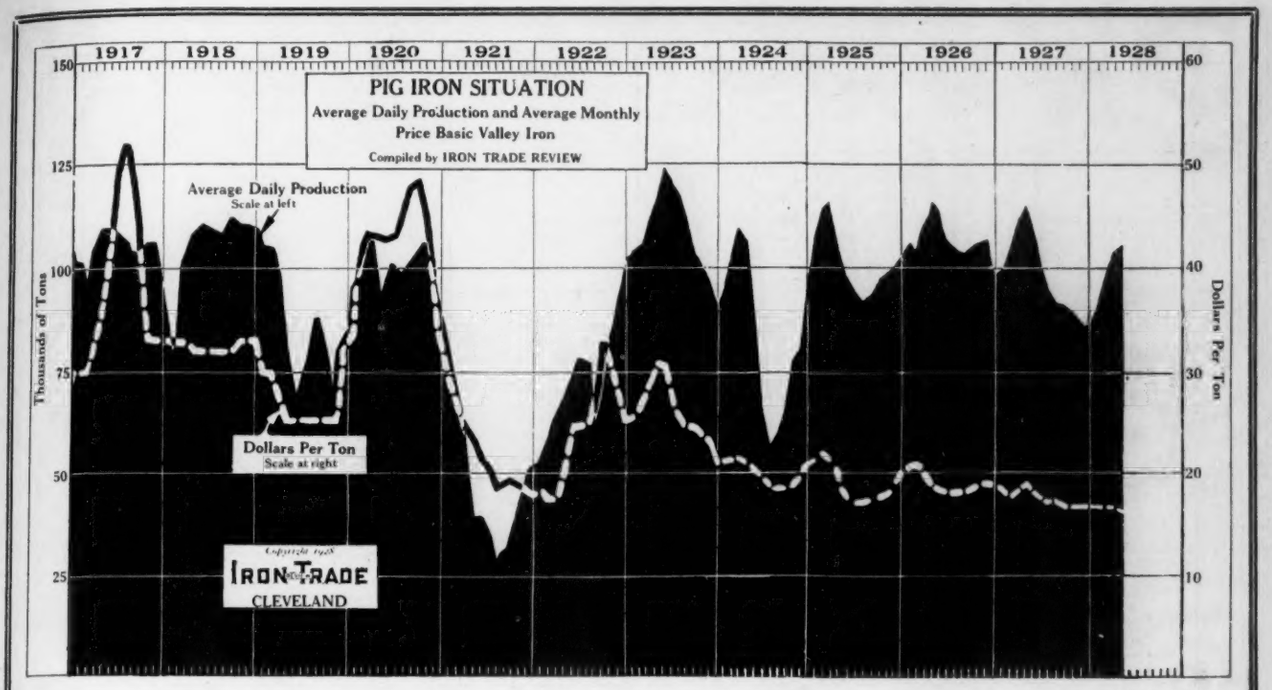
ONE factor which may lead to greater purchases of cars is found in the rising level of freight car loadings. During the third week of April freight movements increased sharply and the total of 944,000 cars loaded was 32,000 more than in the preceding week and only 5800 cars fewer than in the corresponding week last year. In the preceding week loadings fell 37,000 cars behind one year before.

NOT only are freight movements improving but the railroads are enjoying better earnings. In March the net railroad operating income was $90,774,000 compared with $70,000,000 in February. However, earnings were less than in March of one year ago, and the return upon property valuation of only 4.66 per cent is far from being satisfactory to the roads.

GAINS in earnings and in freight movements should continue for some time. One encouraging feature of the situation is the increase in movement of miscellaneous freight. This is showing a substantial improvement over one year ago. Not only is this class of business more profitable to the roads, but it is an indication of general commercial activity throughout the country.

ANOTHER condition pointing to better loadings is the low stocks of coal. One year ago, with the beginning of April, coal production declined sharply because of the strike in the soft coal regions. Present low stocks of coal would seem to indicate that a building-up process will be carried forward over the coming months resulting in more coal output and greater freight movements of coal.

The Business Trend

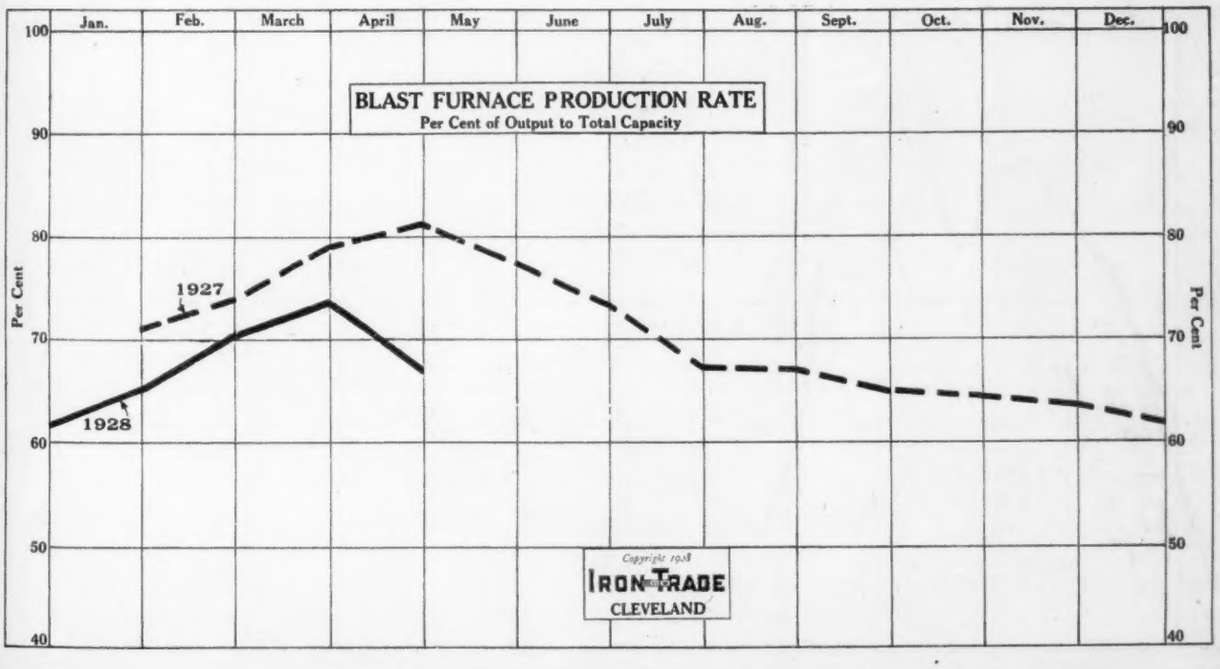


Pig Iron Situation

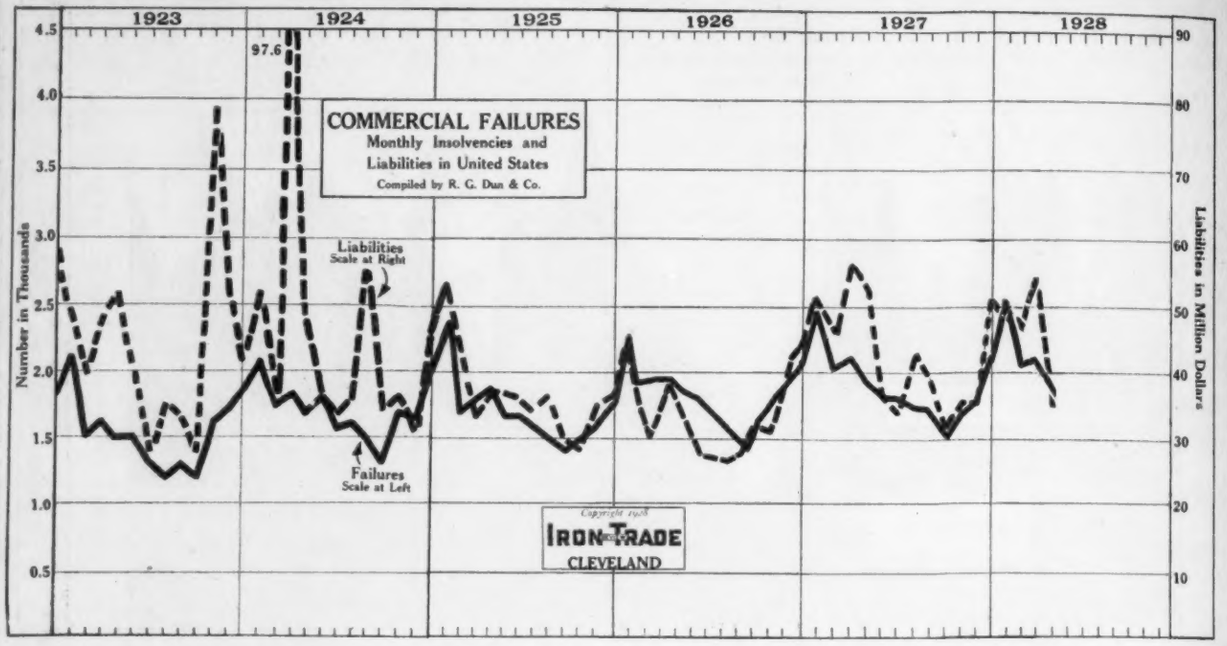
PIG iron production in April was at the highest daily rate of any month this year. The rate was 105,979 tons against 103,199 tons in March. Compared with last year, however, the showing continues unfavorable. In April of 1927 the daily average rate of pig iron production was 114,146 tons. The April rate was also below that of any April since 1922. Prices of pig iron persist in their prolonged weakness. Consumption, however, is well sustained and shipments, show no abatement.

Furnace Operation Rate

NOTWITHSTANDING the rise in the rate of pig iron production in April the operations of blast furnaces declined during the month. At the close of the month 194 furnaces were active against 196 one month before, and as a result it seems probable that pig iron production has touched its peak, with the prospects of a decline in May. During the month the percentage of production to the capacity of stacks increased to 78.0 per cent against 76.1 per cent in March and 84.1 per cent in April, 1927.



The Business Trend

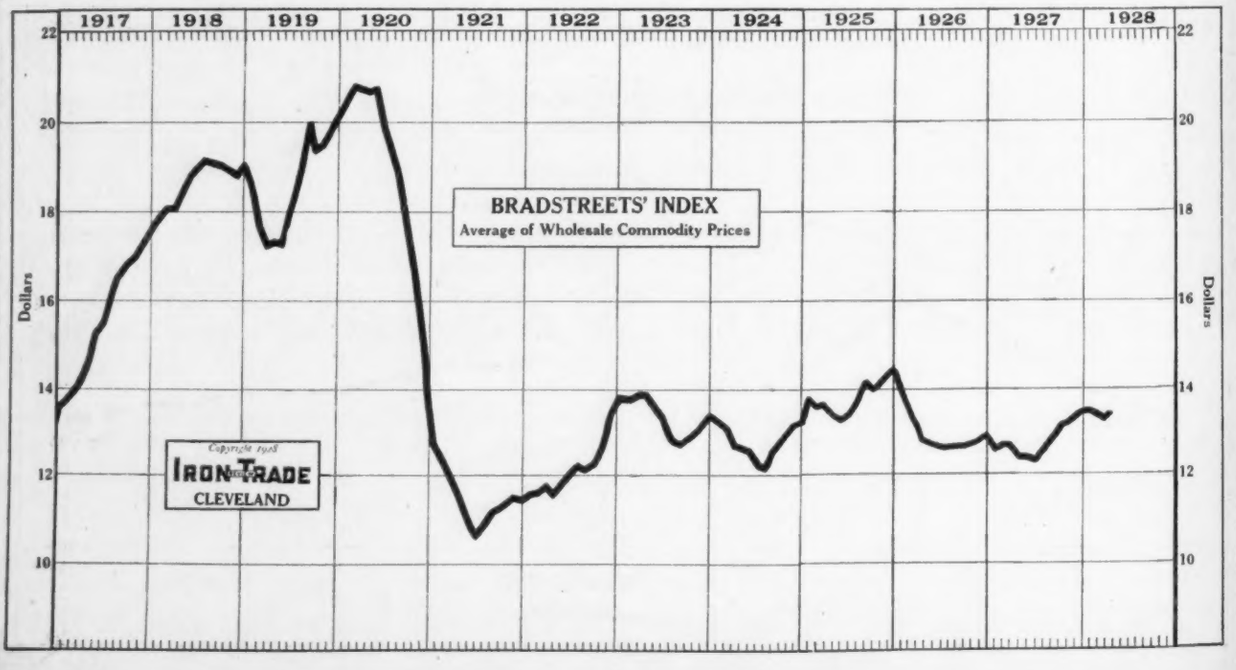


Commercial Failures

DURING April there was a marked reduction in the total for commercial failures throughout the country. According to the compilation of R. G. Dun & Co., the number of failures during the month was 1818, the smallest for any April since 1924. Liabilities involved in the failures totaled $34,985,000, the smallest for any April since 1920. Compared with one year before failures number 7.6 per cent less while liabilities were 34 per cent smaller and more than 36 per cent below the March, 1928, level.

Bradstreet's Prices

FOR the second consecutive month Bradstreet's index of wholesale commodity prices advanced in April. The index at the beginning of May stood one-tenth of 1 per cent above the level of one month before and fully 8 per cent above that of one year ago. The rise of prices in April and in March reverses the declining tendency prevailing during the first two months of the year. The upturn in price of farm products was largely responsible for the increase in the index.



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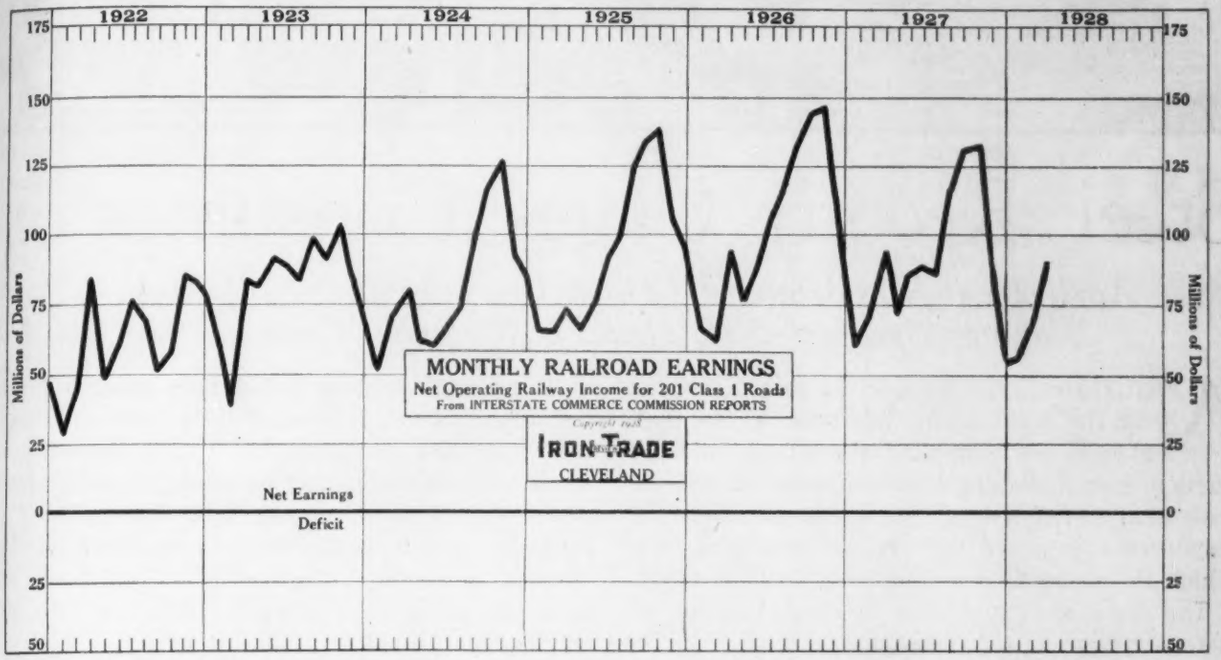

Railroad Earnings

NET railroad operating income in March for Class 1 roads was $90,774,000, or at the annual rate of 4.66 per cent on their property investment. This compares with $70,064,000 in February and with $95,602,380 in March, 1927, or 4.97 per cent on property investment. Improvement in March over February reflected better traffic totals resulting from improved business conditions. Operating expenses have been curtailed this year but freight traffic has been reduced compared with the movement a year ago.

Steel Foreign Trade

MARCH brought a large gain in iron and steel foreign trade. Exports for the month amounted to 221,935 tons against 185,915 tons in February and 171,094 tons in March, 1927. The showing of imports was even more impressive. During the month 74,128 tons of iron and steel products were imported against 47,628 tons one month before and 61,872 tons one year before. A large gain in pig iron imports was registered. Finished steel shipments showed improved activity over preceding months.

Steel Record Gages Consumption

April Ingot Top Insures High Activity by Users into June—
Bookings Heavier—New Modes of Shipment Complicating

APRIL'S steel ingot production record is water over the dam and no deterrent to the present mild downtrend in both demand and production, but it directs attention anew to the extraordinary vitality of steel consumption. It emphasizes, as noted last week, the height from which the seasonal second quarter letdown starts.

The April steel record is attributed largely to the carryover of specifications received late in March against expiring first quarter contracts, the steadfastness of automotive requirements and capacity operations at rail mills.

First Half Promises a Record

Through May, and probably into June, the finished products into which April ingots are being converted will be in the various processes of consumption. Hence a first half year of record proportions, if spotty in some directions, is assured.

Bookings in many finished steel lines have improved slightly in the past week, and May to date has developed more business than the comparable period of April, but the showing is not particularly encouraging because the first half of April was blighted by start of a new quarter.

In general, demand is relaxing moderately—a condition not yet reflected fully in consumption—and operating schedules of most steelmakers, while still approximating 80 per cent, are a shade closer to incoming orders. In the automotive industry, which continues the mainstay of the market, increased Ford operations and parts orders maintain the balance. Steel prices are largely unchanged.

Pig Iron Quiet; Melt Steady

Between-quarters inertia is proving a heavy load for pig iron. Some third quarter iron has been sold, especially at Chicago, but in other districts melters are content to order out their second quarter contracts. Between 5000 and 10,000 tons of pipe iron has been placed in eastern Pennsylvania. The Mahoning valley basic market, in a state of flux for several weeks, has come to rest for the time being at $16.25 to $16.50. At Chicago the $16, Birmingham, price on southern iron is reported shaded 50 cents. Consumption in all districts is well sustained.

Specifications against second quarter steel bar contracts and spot sales at Chicago still keep pace

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	May 9, 1928	Apr. 1928	Feb. 1928	May 1927
PIG IRON				
Bessemer, del. Pittsburgh	$19.26	19.26	19.26	20.86
Basic, valley	16.25	16.75	17.00	18.10
Basic, eastern, del. eastern Pa.	19.25	19.25	19.50	20.75
*No. 2 foundry, del., Pittsburgh	19.01	19.01	19.01	20.26
No. 2 foundry, Chicago	18.50	18.50	18.50	20.00
*Southern No. 2 Birmingham	16.00	16.00	16.00	18.00
*Southern Ohio, No. 2 Ironton	19.00	19.00	19.00	20.00
**No. 2X, Virginia furnace	20.50	20.50	20.50	22.00
**No. 2X, eastern, del. Phila.	21.26	21.26	20.91	22.26
Malleable valley	17.25	17.25	17.25	18.50
Malleable, Chicago	18.50	18.50	18.50	20.00
Lake Superior charcoal del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.76	18.56	18.51	19.76
Ferromanganese, del. Pittsburgh	104.79	104.79	104.79	99.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.50	2.60	2.65	2.80
Connellsville, foundry ovens	3.60	3.65	3.75	3.80
SEMIFINISHED MATERIAL				
Sheet bars open-hearth, Youngstown	32.50	32.75	34.00	34.00
Sheet, bars, open-hearth, Pittsburgh	34.00	34.00	34.00	33.75
Billets, open-hearth, Pittsburgh	33.00	33.00	33.00	33.00
Wire rods, Pittsburgh	44.00	44.00	43.50	42.00

	May 9, 1928	Apr. 1928	Feb. 1928	May 1927
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.85	1.85	1.85
Steel bars, Chicago	2.00	2.00	1.95	2.00
Steel bars, Philadelphia	2.17	2.17	2.17	2.17
Iron bars, Chicago	2.00	2.00	1.95	2.00
Shapes, Pittsburgh	1.85	1.85	1.85	1.85
Shapes, Philadelphia	2.07	2.08	2.08	2.07
Shapes, Chicago	2.00	2.00	1.95	2.00
Tank plates, Pittsburgh	1.85	1.85	1.85	1.85
Tank plates, Philadelphia	2.10	2.10	2.10	2.17
Tank plates, Chicago	2.00	2.00	1.95	2.00
Sheets, black, No. 24, Pittsburgh	2.75	2.75	2.85	2.90
Sheets, blue anl., No. 10, Pittsburgh	2.00	2.05	2.10	2.25
Sheets, gal., No. 24, Pittsburgh	3.65	3.65	3.65	3.80
Sheets, black, No. 24, Chicago	2.90	3.05	3.05	3.10
Sheets, blue anl., No. 10 Chicago	2.15	2.25	2.25	2.40
Sheets, galvanized, No. 24, Chicago	3.75	3.90	3.90	3.95
Plain wire, Pittsburgh	2.50	2.50	2.45	2.40
Wire nails, Pittsburgh	2.60	2.60	2.60	2.55
Tin plate, per base box, Pittsburgh	5.25	5.25	5.25	5.50
SCRAP				
Heavy melting steel, Pittsburgh	15.00	14.85	15.05	15.50
Heavy melting steel, eastern Pa.	13.75	13.75	14.00	14.45
Heavy melting steel, Chicago	13.00	12.75	12.55	12.35
No. 1 wrought, eastern Pa.	15.25	15.25	15.25	16.75
No. 1 wrought, Chicago	13.15	12.45	12.40	12.75
Rails for rolling, Chicago	14.25	14.00	15.00	15.10

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

STEEL PLATES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.10c to 2.15c
New York, del.	2.175c to 2.225c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland	2.04c to 2.09c
Buffalo	2.00c
Coatesville, Sparrows Point	2.00c to 2.05c
Birmingham	2.05c
Pacific coast, c.i.f.	2.25c to 2.30c

STRUCTURAL SHAPES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.07c to 2.18c
New York, del.	2.14c to 2.19c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland, del.	2.04c to 2.09c
Buffalo	2.00c
Bethlehem	1.95c to 2.00c
Birmingham	2.05c
Pacific coast, c.i.f.	2.35c

BARS

SOFT STEEL

Pittsburgh	1.85c to 1.90c
Chicago	2.00c
Birmingham	2.05c
Buffalo	2.00c
San Francisco	2.35c
Cleveland mill	1.85c to 1.90c
Cleveland delivered	1.87½c and 2.09c
Philadelphia, delivered	2.17c
New York, delivered	2.19c
Boston, delivered	2.265c to 2.415c
Pittsburgh, cold finishing	2.00c to 2.05c
Pittsburgh, forging quality	2.10c to 2.15c

RAIL STEEL

Chicago	1.85c
Eastern mills	1.75c

IRON

Chicago	2.00c
New York, delivered	2.14c to 2.24c
Philadelphia, delivered	2.12c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet	1.85c to 1.90c
Chicago, billet	2.15c to 2.65c
Chicago, rail steel	1.85c to 1.95c
Youngstown, billet	1.90c to 2.00c

COLD FINISHED STEEL

Cold finished steel bars, drawn or rolled, Pitts., Chi., c.l.	2.20c
Shafting (turned, polished) Pittsburgh	2.20c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c
Cold finished steel bars, Cleve.	2.25c

TIN AND TERNE PLATE

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.25
Gary, Ind., base 10 cents higher.	
Long ternes, primes, No. 24	4.10c

*Price subject to quantity differentials.

SHEETS

SHEET MILL BLACK

No. 24, Pittsburgh base	2.70c to 2.85c
No. 24 Philadelphia delivered	3.02c to 3.22c
No. 24, Gary, Indiana Harbor	2.85c to 3.00c
No. 24, Chicago, delivered	2.90c to 3.05c
No. 24, Birmingham, base	3.05c

TIN MILL BLACK

No. 28, Pittsburgh, base	2.90c
No. 28, Gary, base	3.00c

GALVANIZED

No. 24, Pittsburgh, base	3.60c to 3.75c
No. 24, Philadelphia, delivered	3.92c to 4.07c
No. 24, Gary, Indiana Harbor	3.70c to 3.85c
No. 24, Chicago, delivered	3.75c to 3.90c
No. 24, Birmingham, base	3.90c

BLUE ANNEALED

No. 10, Pittsburgh base*	1.95c to 2.10c
No. 10, Philadelphia, delivered	2.32c to 2.42c
No. 10, Gary, Indiana Harbor	2.15c to 2.20c
No. 10, Chicago, delivered	2.10c to 2.15c
No. 10 Birmingham, base	2.15c to 2.20c

*Plus 10 cents for 40 inches or wider.

AUTOMOBILE

No. 20, Pittsburgh base	4.00c

IRON

No. 10, Pitts., blue ann., c.l.	2.80c
No. 24, Pitts., box annealed, 1-pass cold roller, carload	3.75c
No. 24, Pitts., gal., c.l.	4.85c

(*Turn to the following page*)

with shipments. Miscellaneous orders for plates at Chicago defer deliveries, as in bars, four to six weeks. If prospective barge and tank work develops at Pittsburgh, May plate business there will top April.

Prospective structural shape projects are headed by 50,000 to 60,000 tons for the Merchandise Mart at Chicago, which may be several months in reaching mill books. Bridge work continues to feature eastern shape demand. The 1.85c, Pittsburgh, price on heavy steel militates against the 2-cent price at Chicago, especially on shapes.

Competition for sheet business is sharper, though prices have given no more ground. As in heavy steel, the lower-priced markets to the east of Chicago are impairing the sheet price structure in that district. Pressure for delivery of autobody sheets has eased off in the Mahoning valley. Tin plate mills continue to operate 90 to 95 per cent.

Strip Demand Is Outrunning April

Considering all makers, hot and cold rolled strip business this month is ahead of April. On the wider sizes of hot rolled the tendency is toward the 1.75c, Pittsburgh, price which governed most of the first quarter. Cold finished bar interests are turning to other outlets to neutralize moderate contraction from automotive users.

Cros-currents in the iron and steel trade promise to make 1928 a unique year. Already pig iron, scrap and finished steel are moving by water between Great Lakes ports. A Buffalo pig iron producer contemplates storing pig iron at Beacon, N. Y., and Jersey City, N. J., to supply foundries when the New York barge canal is frozen. By utilizing fabrication-in-transit privileges Buffalo structural steelmakers are crowding Pittsburgh and Cleveland fabricators in the Detroit market. Buffalo reinforcing bar interests can ship by barge to New York and beat the all-rail rate from Pittsburgh $4.80 per ton. An eastern independent plans warehouses on the Pacific coast.

Rare When April Ingots Exceed March

April's ingot record is the more noteworthy because made following a March that just fell short of a new mark. Only four times since 1917, when monthly ingot figures were first compiled, has April's daily rate exceeded March. Last month a daily rate of 172,103 tons was attained, against 166,945 tons in March and the previous record of 167,973 tons of March, 1927. The short month held down the April total to 4,302,573 tons, against 4,507,520 tons in March. Ingot output for the first four months of 1928 stands at 16,846,729 tons; a year ago it was 16,264,527 tons. Last year the daily ingot rate declined from 167,973 tons in March to 158,744 tons in April; this year it has increased slightly over 3 per cent.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (May 9, 1928)	$35.57
Last week (May 2, 1928)	35.56
One month ago (April, 1928)	35.67
Three months ago (February, 1928)	35.62
One year ago (May, 1927)	36.76
Ten years ago (May, 1918)	56.59
Fifteen years ago (May, 1913)	27.34

The IRON TRADE REVIEW composite of fourteen leading iron and steel products advanced 1 cent this week as a result of minor adjustments, now being $35.57.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED
SEE ALSO PRECEDING PAGE

HOOPS, BANDS, STRIP

Hot strip, under 3-inch, Pitts. 2.15c to 2.40c
Hot strip, 3 to 6-inch, Pitts. 2.00c to 2.10c
Hot strip, 6 to 12-inch, Pitts. 1.85c to 2.00c
Hot rolled strip, 12 to 24-inch 16 gage and heavier, coils or cut lengths, 1.85c plate basis, or 2.00c blue annealed basis.
Hot strip, under 3-in., Chi..... 2.30c to 2.50c
Hot strip, 3 to 6-in., Chi..... 2.20c to 2.30c
Hot strip, 6 to 12-in., Chi..... 2.00c to 2.10c
Hot strip, 12 to 24 in., Chi., 2.10c to 2.20c, blue annealed sheet basis.
Cold rolled strip, hard coils, 1½ inches and wider by 0.100-inch and heavier base, Pitts., Cleve., (over 3 tons) ..... 2.75c to 2.90c
Pitts., Cleve., (1-3 tons).... 3.00c to 3.15c
Worcester, Mass. 3.05c

ALLOY STEEL

Hot Rolled

F.o.b. Pittsburgh or Cleveland

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net price 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.00	3.65
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium....	1.50	4.15
Carbon Vanadium	0.95	3.60
9250	0.25	2.90

TUBING

BOILER

Carload Discounts—Less-carloads 4 points Lower—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch 42½
Charcoal iron, 3¼ to 4½-inch 9
Seamless hot rolled 3¼ to 3½-inch.... 46

Further discounts of five to seven 5 per cents for carloads on lap welded steel. On seamless hot rolled several more 5 per cents, and on charcoal from one 10 per cent to two 10 and one 5 per cents.

COLD DRAWN SEAMLESS

F.o.b. mill in desirable quantities

Random lengths over 5 ft.....55 per cent
Selected lengths, 1 to 18 ft.....53 per cent

WIRE PRODUCTS

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base. Dealers 5 cents per 100 pounds extra

Bright plain wire, No. 9 gage.. 2.50c
Annealed fence wire 2.65c
Galvanized wire, No. 9 gage.... 3.10c
Barbed wire, painted 3.10c
Barbed wire, galvanized 3.35c

	Per 100 lbs.
Wire nails	$2.55 to 2.65
Galvanized nails	4.55 to 4.65
Polished staples	3.00 to 3.10
Galvanized staples	3.25 to 3.35
Coated nails, 100 lb. kegs, Sept. 1, 1926 extras apply....	2.55 to 2.65

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts..... $20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

CAST IRON WATER PIPE

Prices per net ton

Class B Pipe

Six-inch and over, Birming'm $30.00 to 31.00
Four-inch, Birmingham ..... 34.00 to 35.00
Four-inch, Chicago ..... 43.20 to 45.20
Six-inch to 24-inch, Chicago.... 39.20 to 41.20
Four-inch, New York ..... 40.50 to 41.85
Six-inch and over, New York 37.25 to 38.25
Standard fittings, Bir. base..... $100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

IRON AND STEEL PIPE

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 per cent; on galvanized by 1½ points with a supplementary 5 per cent.

CHAIN, PILING, CUT NAILS

Cut nails, c.l., f.o.b. mills..... 2.80c
Chain, 1-in, proof coil, Pitts..... 6.00c
Sheet piling base, Pittsburgh.. 2.25c to 2.35c

RAILS, TRACK MATERIAL

Standard bessemer rails, mill $43.00
Standard open-h'th rails, mill $43.00
Relaying rails, St. Louis.....$24.00 to 31.00
Relay, rails, Pitts. 60 to 90 lb..$27.00 to 30.00
Light rails, 25 to 45, mills..... $36.00
Angle bars, Chicago base..... 2.75c
Spikes, railroad, Pittsburgh.... 2.80c
Spikes, small railroad, ⅞-inch and smaller, Pitts..... 2.80c
Spikes, boat and barge, Pitts. 3.00c
Spikes, railroad, Chicago 2.80c
Track bolts, Pitts., stand.... 70 off list
Track bolts, Chicago 3.80c
Tie plates, Chicago, Pitts..... $43.00

BOLTS AND NUTS

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread ..... 70 off
Rolled thread ⅝x6 and smaller take 10 per cent lower list.
Eagle list ..... 70 off

MACHINE BOLTS

All sizes, cut thread ..... 70 off
Rolled thread ⅝x6 and smaller take 10 per cent lower list.
Lag screws ..... 70 off
Plow bolts, Nos. 1-2-3-7 heads ..... 70 off
Tap bolts ..... 70 off
Blank bolts ..... 70 off
Stud bolts without nuts ..... 70 off
Stove bolts, 75, 20, 10 and 5 off in pkgs. 75, 20, 10 and 5 with 2½ off in bulk.
Tire bolts ..... 60-5 off

NUTS

Semifinished ..... 70 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10 off
Upset 1-in. diam. and smaller ..... 85-5 off

SQUARE HEAD SET SCREWS

Milled ..... 80-10 off
Upset 1-in. diam. and smaller....80-10-10 off

RIVETS

Struct., c.l., Pitts.-Cleve..... 2.90c
Structural, c.l., Chicago..... 3.00c
**⅞-inch and smaller, Pitts.....70 and 10 off
Chi., Cleve. .....70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

WASHERS

Wrought, c.l., Pitts. dist.....$6.75 off
Wrought, c.l., Chicago dist....$6.70 to 6.90 off
Lock: To dealers ..... 85-5 off
Lock: To consumers ..... 85 off

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth $33.00
Pittsburgh, bessemer 33.00
Youngstown 33.00
Cleveland 33.00
Philadelphia 38.30
Chicago 34.00
Forging, Chicago ..... 39.00 to 43.00
Forging, Pittsburgh 38.00
Forging, Philadelphia 43.30

SHEET BARS

Pittsburgh 34.00
Youngstown ..... 32.50 to 33.00
Cleveland ..... 32.50 to 33.00
Chicago 35.00

SLABS

Pitts., Young., and Cleve..... $33.00

WIRE RODS

Pittsburgh, Cleveland $44.00
Chicago 45.00

SKELP

All grades, Pittsburgh 1.85c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%.... $4.55
Mesabi bessemer, 51½% 4.40
Old range bessemer, 51½%..... 4.40
Mesabi nonbessemer, 51½%..... 4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 58-63%..... 8.00 to 8.50
Copper free low phosphorus 58 to 65 per cent ..... nominal

FOREIGN IRON ORE

Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese 10.00 to 10.50
North African low phosphorus nominal
Swedish foundry or basic, 65% 9.00 to 9.50
Spanish and North African basic, 50 to 60 per cent..... 8.50 to 9.00
Newfoundland foundry, 55%.... 9.00 to 9.50

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian .....36 to 38 cents
Indian .....36 to 38 cents
Caucasian (53-55 per cent) .....38 to 40 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton....$15.00 to 16.00
Washed gravel, imported duty paid, east. tidewater, net ton 15.00 to 16.38

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania .....$43.00 to 46.00
Ohio ..... 43.00 to 46.00
Illinois ..... 43.00 to 46.00
Kentucky ..... 43.00 to 46.00
Missouri ..... 43.00 to 46.00
Maryland ..... 43.00 to 46.00
Georgia and Alabama ..... 40.00 to 45.00

Second Quality

Pennsylvania ..... 35.00 to 38.00
Ohio ..... 35.00 to 38.00
Illinois ..... 35.00 to 38.00
Kentucky ..... 35.00 to 38.00
Missouri ..... 35.00 to 38.00
Maryland ..... 35.00 to 38.00
Georgia and Alabama ..... 30.00 to 35.00

SILICA BRICK

Pennsylvania 43.00
Joliet, Ill., East Chicago, Ind.... 52.00
Birmingham 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½ 65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite.. 40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½ 45.00

Pig Iron

Shipments Show Consumption Continues at Good Rate—Large Sales of Pipe Iron in East —Third Quarter Purchasing at Chicago

CONSUMPTION of pig iron is well sustained, as reflected by shipments, which generally continue on a satisfactory basis with the rate this month equal to or slightly better than April. Current business is comprised mainly of small orders. At Chicago several large purchases for third quarter swelled the total for the week to 15,000 tons, while miscellaneous orders booked by furnace interests at Cleveland amounted to 23,000 tons. Sales of pipe iron in eastern territory aggregate 5000 to 10,000 tons, and bookings of low phosphorus iron amounted to 2000 tons. The basic recently purchased by the American Steel Foundries for delivery to Alliance, O., now is reported to have been sold by a middle interest from stock it purchased over a year ago.

PITTSBURGH, May 8.—Sales of pig iron are confined to small lots. Interest has not developed for the third quarter. Shipments are keeping up fairly well in some directions, and dropping off in others. Single carloads of malleable bring $17.25, valley. No. 2 foundry is selling in lots up to 200 tons at $17.25, but producers will not commit themselves on what would be done on larger tonnages. Basic is quoted nominally at $16.50, and bessemer at $17.50, valley, supported only by single carload sales.

Boston, May 8.—The Mystic Iron Works continues to find a fairly satisfactory outlet for its pig iron, and in the past week sold about 4500 tons of the 7000 tons purchased in this district. One Buffalo stack was credited with 1200 tons, while the rest was divided between New York state, western Pennsylvania and Alabama irons. A little Indian iron also was sold, at $21.75 to $22 on dock, duty paid, Boston. The melt in this district shows a slight improvement.

New York, May 8.—Crane Co., Bridgeport, Conn., has closed for approximately 1000 tons of pig iron with eastern New York state and Buffalo producers. Thatcher Furnace Co., Newark, N. J., is inquiring for 2000 tons of No. 2 plain for its Garwood, N. J., plant, delivery to extend into third quarter. Worthington Pump & Machinery Corp. has closed for 275 tons of No. 1X with a Buffalo maker. Several carloads of bessemer have been sold in this district, at about $17.50, Buffalo. Buffalo foundry iron for shipment to this district continues $16 to $16.50, base, furnace, with silicon differentials occasionally ignored. Eastern Pennsylvania foundry iron continues $20, base, furnace.

A lot of 1000 tons of English low phosphorus recently sold to the Falk Co., Milwaukee, it is understood, will be shipped down the St. Lawrence river, through the Welland canal and down the lakes to Milwaukee.

Water and rail movement of Buffalo iron into the eastern markets will assume greater importance if a Buffalo merchant producer carries iron in stock at Jersey City, N. J., and Beacon, N. Y., as rumored. This would make Buffalo iron a year-around competitor and bridge the six months when the New York barge canal is frozen. It is believed the project is feasible to supply consuming points which can be reached more cheaply by rail and canal.

On iron to be stored at Beacon the handling charge of the New Haven railroad is 65 cents a ton, plus a storage charge. At Jersey City the handling charges range from 15 to 40 cents, with prospect of a reduction shortly. Roughly, it is believed the charge for handling iron in and out of storage at Jersey City would be 50 to 55 cents per ton, plus a storage of probably 10 cents a ton the first month and 5 cents a month thereafter.

The trade figures it would not pay to carry stocks at Jersey City for supplying Jersey City and Bayonne foundries unless the canal rate were well below $2.50, and it is difficult to shade that figure. Present rates are such that it would be cheaper to move iron in winter from Buffalo by rail to Newark, Elizabethport, Bayway, Dover, Paterson, Harrison and other New Jersey points with an all rail freight rate of $3.28 to $3.78 than to supply them out of stock at Jersey City. But in the case of points taking a $4.91 rate from Buffalo there would be considerable saving in taking iron out of storage at Jersey City during the winter months.

Pig Iron Prices

Per Gross ton

Bessemer, valley furnace	$17.50
Bessemer, del., Pittsburgh	19.26
Basic, valley furnace	16.25 to 16.50
Basic, del., Pittsburgh	18.13 to 18.26
Basic, Buffalo furnace	17.00
Basic, del., eastern Pa.	19.25 to 20.25
Malleable, valley furnace	17.25
Malleable, del. Pittsburgh	19.01
Malleable, del. Cleveland	18.50
Malleable, Chicago furnace	18.50
Malleable, Buffalo furnace	17.50
Malleable, del. eastern Pa.	20.75 to 21.25
No. 1 foundry, Chicago furnace	19.00
No. 1X, eastern del., Phila.	21.76
No. 1X, Buffalo furnace	18.50
No.2 foundry, valley furnace	17.25
No. 2 foundry, del., Pittsburgh	19.01
No. 2 plain, Everett, Mass., fur.	19.00 to 21.00
No. 2 plain, Buffalo furnace	17.00
No. 2 foundry, Chicago furnace	18.50
No. 2 foundry, Granite City	19.00 to 19.50
No. 2 foundry, Ironton furnace	19.00
No. 2 foundry, del. Cleveland	18.50
No. 2 plain, del. Phila	20.76
No. 2 plain Virginia furnace	20.00 to 20.50
No. 2 plain, N. J., tidewater	19.78 to 21.76
No. 2 foundry, east N. Y. fur.	18.00
No. 2 Alabama, Birmingham	16.00
No. 2 Alabama, del. Cincinnati	19.69
No. 2 Tenn., Birmingham base	16.00
No. 2 Tenn., del., Cincinnati	19.69
No. 2 Alabama, del. Chicago	22.01
No. 2 Ala., del. Chicago, river-rail	20.18
No. 2 Alabama, del. Cleveland	22.01
No. 2 Alabama, del. St. Louis	20.42
No. 2X, east. N. J., tidewater	19.78 to 22.26
No. 2X, eastern, del. Phila.	21.26
No. 2X, foundry, Buffalo furnace	17.50
No. 2X, eastern, del. Boston	23.15 to 23.65
No. 2X, Virginia furnace	20.50
Gray forge, val., del., Pittsburgh	18.76
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76 to 27.29
Low phos. copper bearing fur.	23.00 to 23.50
Charcoal, Birmingham	28.00
Charcoal, Superior, del., Chicago	27.04

Silvery iron, Jackson county (Ohio) furnace in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county (Ohio) furnace, in per cents: 10—$30; 11—$32; 12—$34; 13—$36 14—$38; 15—$40.50; 16—$43.

Buffalo, May 8.—Pig iron inquiry is negligible except for some interest among eastern Pennsylvania consumers in late second quarter iron. For local delivery the base is $17, while for outside business shading is necessary. Heavy shipments are being made by barge canal to eastern points. Shipments on old contracts are slower this week.

Youngstown, O., May 8.—Basic iron now moving from a Canton, O., furnace to the American Steel Foundries at Alliance, O., was sold by this furnace more than a year ago to a broker with headquarters out of the state, and was sold by this broker to the American Steel Foundries within the past fortnight. Reports place the delivered price at Alliance as low as $16.75. One effect of the transaction is to re-establish the former differential between basic and foundry iron, and basic iron this week appears quotable at $16.25 to $16.50.

Chicago, May 8.—Several large purchases for third quarter boosted pig iron sales above 15,000 tons for the week. Spot buying continues active, largely from smaller foundries which have not been contracting. Two cargoes of boat iron have arrived from Cleveland, and a mixed cargo of iron and steel from Buffalo sellers of boat iron, meeting considerable sales resistance. Some of the boat tonnage sold as low as $17.50. One of two Federal furnaces at South Chicago will go down this week. The base price of $18.50 is holding for spot and third quarter, as boat iron tonnage is light and has little effect on the market. Sales of southern foundry iron are reported at $15.50. Ship-

(*Concluded on Page* 1239)

Coke

Foundry Specifications for Beehive Fuel 50 to 70 Per Cent—Furnaces Still Out of Market

SPECIFICATIONS from foundries for beehive coke are 50 to 70 per cent of normal, while demand for by-product coke also shows a shrinkage. Usual prices on standard beehive foundry coke are $3.60 to $4, Connellsville. Blast furnaces are out of the market, and water gas producers are delaying purchases until the price situation is clarified.

Pittsburgh, May 8.—While two or three gas producers, one requiring a carload daily for a year, still are in the market for beehive coke, their purchases are being delayed awaiting the outcome of exhaustive tests. Blast furnaces are not buying, and nonmetallurgical users occasionally purchase small lots in the spot market. While buyers of single carloads occasionally are able to develop as low as $2.50 the more general quotation is $2.65, and that price is quoted on an inquiry now current for eight carloads. Inquiries for third quarter are not yet appearing, but $2.75 is the contract price, and makers want $3 for a full-year's delivery. Demand for heating coke has disappeared. Foundries are specifying only 50 to 70 per cent of normal against contracts. Spot demand is exceedingly limited. Some fuel not strictly standard is available occasionally at $3.50, but the more usual asking price is $3.60 to $4. Some oven operators are able to obtain $4.25, and premium brands sell at $4.75 to $5.10.

The coal market is dull, while the lake coal freight situation remains unsettled. Industrial demand is absent owing to utilization of stockpiles. Slack coal is about 10 cents cheaper than last week because of West Virginia competition.

Production of coke in the Connellsville region in the week ended April 28 was 58,650 tons, compared with 59,460 tons in the preceding week, according to the *Connellsville Courier*.

Boston, May 8.—Foundry coke shipments continue moderate. April shipments were about the smallest of any month so far this year. March totaled the largest of the four months. Prices are steady.

New York, May 8.—Coke demand continues slow. Prices are unchanged. By-product foundry coke continues $8.30, northern New Jersey ovens, equivalent to $9 to $9.40, delivered at Newark, N. J. Beehive foundry coke for spot shipment continues $5 to $5.10, Latrobe, Pa., equivalent to $8.71 to $8.81 delivered at Newark, for the premium brands. Ordinary brands range from $4 to $4.25, Connellsville, for consumer, brokers being able to buy at less.

Cincinnati, May 8.—Coke demand is quieter. Prices are holding to the schedule for May and makers declare they will hold through the month.

St. Louis, May 8.—Demand for metallurgical coke has fallen off in response to decreased melt in certain quarters, notably the stove foundries, many of which slowed down operations while preparing new patterns. Average shipments of foundry coke, however, hold up well, and during April were higher than in any month so far this year. No change is reported in prices.

Birmingham, Ala., May 8.—Confidence is expressed by independent coke producers that there will be a steady demand for foundry coke, and that shipments will be unchanged, save for a little improvement, through the summer. The price is $5 base, Birmingham.

Coke Prices

	Beehive Ovens Prices per Net Ton	
Connellsville furnace	$2.50 to	2.75
Connellsville foundry	3.60 to	4.25
New River foundry	7.00 to	8.00
New River furnace		6.00
Wise county foundry	5.00 to	5.50
Wise county furnace	4.50 to	5.00
Alabama foundry		5.00
By-Product Foundry		
Newark, N. J., del.	9.00 to	9.40
Chicago, ovens		9.00
New England, del.		11.00
St. Louis		9.00
Birmingham		5.00
Indianapolis, Del.		8.75
Ashland, Ky.		7.00
Portsmouth, O.		7.00
Detroit, ovens		9.00
Buffalo, ovens	8.50 and	9.00

Ferroalloys

Specifications Fair — Shipments Less Than in April

Pittsburgh, May 8.—Specifications for ferroalloys are fairly well maintained, but total shipments this month will doubtless be less than in April. Prices are unchanged, $100, seaboard or seaboard base, applying on ferromanganese, and $83.50 on 50 per cent ferrosilicon. Progress is reported in booking customers' requirements for last-half spiegeleisen, and while $32, furnace, is considered the open market figure on 19 to 21 per cent grade, contract customers pay down to $30, depending on requirements. Some users worked themselves out of first-half maximum tonnages before the end of April, and these have covered for the remainder of the year.

Cincinnati, May 8.—The Andrews Steel Co. is inquiring for 100 to 200 tons of ferromanganese.

New York, May 8.—Special ferroalloys are firm but unchanged in price. Shipments are large and almost entirely on currrent specifications against contracts. Ferrotungsten asking prices run as high as 95.00c a pound contained but actual sales prices are mostly a few cents lower. The tungsten ore market is strong on account of conditions in China and the prospect of a higher tariff here.

Valley Operations Are Little Changed

Youngstown, O., May 8.—Gains and losses in works operations in this district were fairly even this week, the net results being little changed in rates of activity. One additional independent open hearth brought the total Monday to 37 active out of 53, with the Carnegie Steel Co. operating unchanged at 75 per cent. Bar mills are 50 to 60 per cent active with independents and 75 per cent with Carnegie. Strip and tin mills are around 80 per cent active. Tube works have 14 units active out of 20, one more than last week. The independents started 93 sheet units, against 97 last week out of 127 in the district.

Parts Makers Merge

Chicago, May 8.—Borg-Warner Corp. is being organized to effect consolidation of the Borg & Beck Co., Chicago; Warner Gear Co., Muncie, Ind.; Marvel Carburetor Co., Flint, Mich. and Indianapolis, and Mechanics Machine Co., Rockford, Ill. All are important makers of automotive parts. The new company will have $5,000,000 of 7 per cent preferred stock, of which $3,500,000 will be issued now, and 500,000 shares of no-par common stock.

Climax Molybdenum Co. has moved its offices from the Oliver to the Clark building, Pittsburgh.

Ferroalloy Prices

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$100.00
Ferromanganese, del. Pittsburgh	$104.79
Spiegeleisen, 19 to 21 per cent domestic furnace	32.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	93.00
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium, carload, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

*These prices contract; spot $5 higher.

Scrap

Strength Fairly Well Maintained —Careful Inspection at Chicago —General Buying Light

LITTLE change has been made in iron and steel scrap, price fluctuations being minor. At Chicago a large steelworks order is making activity and grading is close. Most consumers are receptive only when bargains are offered. In some areas shipments are being held back rigidly.

Chicago, May 8.—Iron and steel scrap is holding the strength it developed within the past two weeks, due partly to rigid inspection of heavy melting steel for a round tonnage order. Considerable material offered for this order has been rejected. Dealers buying for this order have been paying high prices. In some cases $14 was paid, but material taken at that figure included lower-priced items, thus lowering the average. Strength appears artificial in some respects, although there is no speculation. Dealer coverage of the past several weeks on pending orders has combed the market but no actual scarcity exists. The Santa Fe and Chicago & North Western offerings released about 10,000 tons. Shipments of scrap are heavy. The Gary works continues to come into the market.

Boston, May 8.—Demand for iron and steel scrap is lighter. Heavy melting steel, rails, machine shop turnings, mixed borings and turnings and forge scrap had whatever demand there was, which was not heavy. Prices held firm. The movement of textile machinery and No. 1 machine cast fell off.

New York, May 8.—Aside from a slightly easier tendency in yard steel,

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Delivered to Consumers, except Detroit where dealers' buying prices are shown

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.65 to 10.75
Boston, dealers	9.25 to 9.50
Buffalo, No. 1	14.25 to 14.75
Buffalo, No. 2	12.75 to 13.25
Chicago	13.00 to 13.50
Cincinnati, deal.	11.25 to 11.75
Cleveland, No. 1	13.25 to 13.75
Cleveland, No. 2	12.50 to 13.00
Detroit, No. 1	11.00 to 11.25
Eastern Pa.	13.50 to 14.00
Eastern Pa., No. 2	11.00 to 11.50
Bethlehem delivery	13.50 to 14.00
N. Y., deal., R. R.	10.00 to 10.85
N. Y., deal., yd.	7.00 to 7.25
Pittsburgh, No. 1	15.00 to 15.75
St. Louis	11.25 to 11.75
Valleys, No. 1	14.25 to 14.75

COMPRESSED SHEETS

Buffalo	12.75 to 13.25
Chicago	11.00 to 11.50
Cleveland	12.50 to 12.75
Detroit	10.75 to 11.00
Pittsburgh	15.00 to 15.50
Valleys	14.00 to 14.50

BUNDLED SHEETS

Buffalo	10.00 to 10.50
Cincinnati, deal.	9.50 to 10.00
Cleveland	11.50 to 12.00
Eastern Pa.	10.50
Pittsburgh	14.00 to 14.50
St. Louis	7.75 to 8.25

SHEET CLIPPINGS, LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.75 to 9.25
Detroit	7.00 to 7.50
St. Louis	8.50 to 9.00

STEEL RAILS, SHORT

Birmingham	11.50 to 12.00
Boston	8.50 to 9.00
Buffalo	15.75 to 16.25
Chicago	15.75 to 16.25
Cincinnati, deal.	15.25 to 15.75
Detroit	11.00 to 11.50
St. Louis	15.50 to 16.00

STOVE PLATE

Birmingham	13.00 to 14.00
Boston, consumers	10.00
Buffalo	12.75 to 13.25
Chicago, net	11.50 to 12.00
Cinn., deal., net	8.00 to 8.50
Cleveland	12.00 to 12.50
Detroit, net	10.75 to 11.25
Eastern Pa.	11.50
N. Y., deal., mill.	7.50 to 8.00
Pittsburgh	12.50 to 12.75
St. Louis	12.00 to 12.50

SHOVELING STEEL

Chicago	13.00 to 13.50
Pittsburgh	10.50 to 11.00
St. Louis	11.25 to 11.75

KNUCKLES, COUPLERS SPRINGS

Buffalo	15.50 to 16.00
Chicago	14.25 to 14.75
Eastern Pa.	16.00 to 16.50
Pittsburgh	16.50 to 17.00
St. Louis	13.00 to 13.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.75 to 17.25
Cincinnati, deal.	12.25 to 13.25
Eastern Pa.	17.50 to 18.50
Pitts. billet and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	13.75 to 14.25
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Buffalo	14.00 to 14.50
Chicago	14.50 to 15.00
St. Louis	12.00 to 12.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston, dealers	9.50 to 10.00
Buffalo, No. 1	12.25 to 12.75
Buffalo, No. 2	14.25 to 14.75
Chicago, No. 1	13.15 to 13.70
Chicago, No. 2	13.00 to 13.50
Cinn., No. 1 deal.	10.50 to 11.00
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	11.00 to 11.50
Pittsburgh, No. 1	11.00 to 11.50
Pittsburgh, No. 2	15.00 to 15.75
St. Louis, No. 1	9.50 to 10.00
St. Louis, No. 2	11.25 to 13.75

WROUGHT PIPE

Boston, dealers	7.75 to 8.25
Eastern Pa.	12.50
Buffalo	12.00 to 12.50
New York, deal.	8.00 to 8.50

YARD WROUGHT

Boston	8.00 to 8.50
Eastern Pa.	14.50 to 15.00

BUSHELING

Buffalo	12.75 to 13.25
Chicago, No. 1	11.00 to 11.50
Chicago, No. 2	8.50 to 9.00
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.00 to 6.50
Cleveland, No. 2	9.25 to 9.50
Pittsburgh, No. 1	12.00 to 12.50
St. Louis, No. 1	9.50 to 10.00
Detroit, mixed	7.25 to 7.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston	5.50 to 5.75
Buffalo	9.00 to 9.50
Chicago	7.00 to 7.50
Cincinnati, deal.	7.50 to 8.00
Cleveland	7.25 to 7.50
Detroit	6.00 to 6.50
Eastern Pa.	10.75
New York, deal.	6.25 to 7.35
Pittsburgh	10.00 to 10.50
St. Louis	7.00 to 7.50

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	5.75 to 6.00
Buffalo	9.50 to 10.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	9.25 to 9.50
Detroit	6.75 to 7.00
Eastern, Pa.	10.50
New York, deal.	6.75 to 7.35
Pittsburgh	10.50 to 11.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	8.00 to 9.00
Boston, chem.	9.50 to 10.00
Boston, dealers	6.00 to 6.50
Buffalo	9.75 to 10.25
Chicago	9.50 to 9.75
Cincinnati, deal.	8.25 to 8.75
Cleveland	9.25 to 9.50
Detroit	6.75 to 7.00
Eastern Pa.	10.50 to 11.00
Eastern Pa., chem.	14.50 to 15.00
New York, deal.	6.75 to 7.35
Pittsburgh	10.75 to 11.25
St. Louis	8.75 to 9.25
Valleys	13.50

PIPES AND FLUES

Chicago, net	8.50 to 9.00
Cincinnati, deal.	7.00 to 7.50
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.50 to 12.00
Chicago, net	11.50 to 12.00
Cleveland	12.00 to 12.50
Eastern Pa.	11.50
New York, deal.	8.00 to 8.50
St. Louis	11.00 to 11.50

FORGE FLASHINGS

Boston, deal.	6.75 to 7.25
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cleve., over 10 in.	11.75 to 12.25
Detroit	9.00 to 9.50
Pittsburgh	13.00 to 13.50

FORGE SCRAP

Boston, deal.	6.00 to 6.50
Chicago	15.50 to 16.00
Eastern Pa.	11.00 to 11.50

ARCH BARS AND TRANSOMS

Chicago, net	18.50 to 19.00
St. Louis	19.50 to 20.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	12.50 to 13.00
Chicago	10.25 to 10.75
Cleveland	12.00 to 12.25
Eastern Pa.	12.00 to 12.50
Pittsburgh	13.00 to 13.50
St. Louis	9.50 to 10.00

STEEL CAR AXLES

Birmingham	16.00 to 17.00
Boston, ship. point	15.50 to 16.00
Buffalo	16.75 to 17.25
Chicago	17.65 to 18.20
Cleveland	16.00 to 16.50
Eastern Pa.	20.00 to 21.00
Pittsburgh	18.50 to 19.00
St. Louis	18.00 to 18.50

SHAFTING

Boston, ship. point	13.00 to 13.50
Chicago	17.35 to 17.90
Eastern Pa.	17.50 to 18.00
New York, deal.	14.00 to 14.50
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	14.00 to 15.00
Boston, con.	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	15.50 to 16.00
Chicago, iron	13.50 to 14.00
Chi., rolled steel	15.50 to 16.00
Cincinnati	12.00 to 12.50
Eastern Pa.	16.00
N. Y., iron, deal.	11.50 to 12.00
Pittsburgh, iron	14.50 to 15.00
Pittsburgh, steel	16.50 to 17.00
St. Louis, iron	13.00 to 13.50
St. Louis, steel	13.50 to 14.00

No. 1 CAST SCRAP

Birmingham, cup.	14.00 to 14.50
Boston	15.00 to 15.25
Buffalo	14.50 to 15.00
Chicago, machiny.	15.95 to 16.50
Chicago, railroad.	14.30 to 14.85
Chicago, agri.	14.00 to 14.55
Cincinnati, mach. cupola, net deal.	14.50 to 15.00
Cleveland, cupola	15.50 to 16.50
Detroit, net	12.25 to 12.75
Eastern Pa. cupola	16.00 to 16.50
N. Y., cup., deal.	13.00 to 13.50
Pittsburgh, cupola	14.50 to 15.00
San Fran., del.	20.00 to 21.00
Seattle	15.00 to 15.25
St. Louis, railroad	13.00 to 13.50
St. Louis, agri.	13.00 to 13.50
St. Louis, machy.	13.00 to 13.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	11.50 to 12.00
Cleve., breakable	12.25 to 12.50
Detroit, auto., net	20.00 to 21.00
Detroit mach., net	12.50 to 13.00
Eastern Pa.	15.50 to 16.00
New York, deal.	11.50 to 12.00
Pittsburgh	13.00 to 13.50

MALLEABLE

Boston, railroad	13.00 to 13.50
Buffalo	15.00 to 15.50
Chicago, agri.	11.75 to 12.25
Chicago, railroad	12.75 to 13.00
Cinn., R. R., deal.	12.00 to 12.50
Cinn., agri., deal.	11.75 to 12.25
Cleveland, agri.	15.00 to 15.50
Cleveland, rail.	15.50 to 16.00
Detroit, auto	14.50 to 15.00
Pittsburgh, rail.	15.00 to 15.50
St. Louis, agri.	11.50 to 12.00
St. Louis, rail.	11.50 to 12.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.00 to 13.50
Boston, dealers	9.75 to 10.00
Buffalo	14.50 to 15.00
Chicago	14.25 to 14.75
Eastern Pa.	14.75 to 15.25
New York	11.00 to 11.50
Pittsburgh district	16.50 to 17.00
St. Louis	13.00 to 13.50

LOCOMOTIVE TIRES

Chicago, No. 1	14.00 to 14.50
Chicago, cut	16.00 to 16.50
St. Louis, No. 1	12.00 to 12.50

LOW PHOS. PUNCHINGS

Chicago	14.50 to 15.00
Pittsburgh	16.50 to 17.00

the scrap market is unchanged. Dealers are now quoting yard steel at $7 to $7.25, New York, a reduction of 25 cents in the outside figure. The Lehigh Valley railroad will sell about 2000 tons at its various yards May 10. The Lackawanna will offer a tonnage next week.

Philadelphia, May 8.—Bethlehem Steel Co. continues to take in shipments of scrap at its Sparrows Point plant against contracts, but no new purchases of scrap are being made for that plant. Some business in blast furnace borings and turnings now is under negotiation for eastern Pennsylvania consumption and indications are that the price paid will be around $10.50, delivered.

Small lots of heavy melting steel at $11.50, delivered, eastern Pennsylvania, indicates this now is the market. Grate bars and stove plate are moving in fair tonnage. A sale of turnings has been made at $10.75, delivered.

Pittsburgh, May 8.—Scrap buyers take in scrap only when it is offered at attractively low figures. A slightly lower consuming rate is in evidence. There is still some coverage of shorts in heavy melting steel at $15.75, but numerous buyers indicate they will not pay even the $15 now quoted as minimum. Steel on the Pennsylvania railroad list brought $15.50 at one nearby consuming point, and a similar figure applied on a purchase by a West Virginia user. Should a customer like the one located at Vandergrift, Pa., come into the market for a large quantity of high quality material, $15.75 or $16 would have to be paid in order to bring out suitable scrap. Consumers will not now pay higher than $15 for hydraulic compressed sheets, but $15.40 recently was paid in the Mahoning valley which lends strength to the market here. The last sale of blast furnace material was $11.25. Buyers will not now pay that high.

Buffalo, May 8.—No major tonnage inquiry for scrap is pending. Some scrap is being purchased in western Great Lakes ports for delivery at Buffalo. One big steelworks has issued a hold shipment order covering all contracts. The market is nominally unchanged.

Cleveland, May 8.—Activity in iron and steel scrap continues restricted, due to lack of buying and restriction of shipments on contracts. A local steelmaker has reduced operations because of furnace repairs. Old material is in good supply, but prices show no further weakening. Heavy melting steel is quoted at $13.25 to $13.75, f.o.b. consumers, in Cleveland, and $1 a ton higher in the Valley. Long forge flashings are down 50 cents at $11.75 to $12.25.

Birmingham, May 8.—Slight improvement is noted in the iron and steel scrap market though activity is not great. Quotations are unchanged and firm. Heavy melting steel continues at $10.75, delivered. No. 1 cast and stove plate have been in greater demand.

St. Louis, May 8.—The feeling in iron and steel scrap is better. Dealers are bidding actively with the result that railroads are obtaining better prices than for a number of weeks. Consumers are resisting present asking prices, but some need material, and are quietly seeking to fill their requirements. Some fair scattering sales have been made but no large single tonnages have been closed.

Cincinnati, May 8.—The scrap market is moving at the slow pace which has been held for several months. Prices have softened again, with reductions of 25 and 50 cents, 75 cents being the largest reduction noted.

Bolts, Nuts, Rivets

Volume of Business Smaller as Automotive Needs Shrink

NUT AND BOLT PRICES, PAGE 1224

Chicago, May 8.—May tonnage of nuts, bolts and rivets is falling behind April, due largely to lighter orders from most lines of farm implement manufacture. Automotive lines on the other hand are keeping up the pace. Operations continue at 65 to 70 per cent. Prices are unchanged and steady at 70 off on nuts and bolts.

Pittsburgh, May 8.—Nut, bolt and rivet orders are small, buyers not desiring to collect stocks. Occasional carloads develop for nuts and bolts, and a few more single carloads of rivets came in from structural and railroad shops. Prices are unchanged and firm, and operations average 60 to 65 per cent.

Cleveland, May 8.—Specifications for bolts and nuts show a slight decrease from preceding weeks. The automotive industry continues to order in good volume, although restriction is noted in buying by other industries. Rivet sales are at an unchanged rate. Operations average 65 per cent, with rivet interests less active.

Coal Stocks Under 1927

Coal stocks in industries in the United States on April 1 were equivalent to a 36-day supply for by-product coke plants, 57 days for electric utilities, 38 days for the railroads, 24 days for the steel mills and 36 days for other industries, states the National Association of Purchasing Agents, New York. Coal stocks April 1 were 41 per cent lower than a year ago, when the bituminous coal strike began.

Semifinished

Specifications Continue Satisfactory—Sheet Bars Stronger in Valley—Rod Users Pay More

PRODUCTION of semifinished steel continues at a high rate, in some instances at 100 per cent, reflecting the general good demand represented by specifications. Spot transactions are small, and there does not appear to be much interest as yet in third quarter. Sheet bars show a stronger tendency in the valley market, $34 being done more frequently.

SEMIFINISHED STEEL PRICES, PAGE 1224

Pittsburgh, May 8.—New demands for semifinished steel are lacking. Shipments of billets, slabs and sheet bars on contracts are fairly well maintained. There is a slight letdown in strip and sheet mill requirements, but tin mill consuming rates are practically unchanged. Some strip companies who divided their tonnage among two or more sources of supply contracted for the full quarter with one, but on the remainder purchase monthly requirements and some have not as yet bought for June. Rerolling billets are unchanged at $33. Forging billet specifications lack volume but those that are coming through apply upon $38 contracts. Some wire rod sellers have at last reached $44 business, some of these having been delivered, invoiced and paid for on that basis. Most wire rod buyers, however, are using stocks gathered in when the price was lower. Skelp is unchanged at 1.85c to 1.90c although tonnages could easily be placed at the minimum.

Youngstown, O., May 8.—Sheet bar shipments from local steel mills continue satisfactory. Billet business is moderate. Additional tendency toward strength appears in the sheet bar market, inclining toward resumption of $34, Youngstown, as the maximum. The range at this time appears $32.50 to $34 for sheet bars. Large billets are $33.

Cleveland, May 8.—Demand for sheet bars, billets and slabs is comprised mainly of specifications on contracts, little new business appearing in the open market.The leading merchant producer here continues to operate at 100 per cent. Prices are steady.

Chicago, May 8.—Shipments of sheet bars have declined slightly, but the leading producer still is holding at $35, Chicago. Demand for forging billets is continuing at the rate of the past seven or eight weeks, the quotation being $39 to $43, according to grade. Billets, 4 x 4-inch, are reported steady at $34, Chicago but demand is light.

Bars

Specifications Continue Good, but New Orders Do Not Replace Shipments—Deliveries Easier

SOFT steel bars continue to lead finished steel and prices are firmer than on plates and shapes. Chicago mills find competition from the East limits the area in which its prices can apply definitely. Surplus bars from March contracts seem to have been cleared and May volume is exceeding that of April. Pittsburgh mills quote 1.85c but hint at 1.90c for third quarter.

BAR PRICES, PAGE 1223

Chicago, May 8.—Orders for bar products again are equal to shipments. Fairly prompt shipments can be made on some sizes but other orders are less easily accommodated on rolling schedules with the result that shipments still are lengthened four to five weeks. Bar mill operations are above 90 per cent for the district, with an active spot market and no contract sales. Orders in the main are for several carloads each, but a few of the larger buyers are forced to carry moderate stocks to care for the wide range of specifications which they fabricate. Cold bar finishers are carrying some stocks, and makers of farm equipment likewise carry a fair volume, but no more than is customary for some months. One producer finds that his customers, normally carrying finished steel stocks of 8000 to 15,000 tons, have had these stocks depleted as much as 50 per cent in recent weeks. This indicates no appreciable decline in spot demand. Both cold finishers and farm equipment lines, the mainstay of bar products demand, are active. Implement plants are closing down the latter part of this month for inventory, but it is expected they will resume at the present rate, as dealers' stocks are well cleaned out. Tractor plants, which are operating at capacity, will not close for inventory.

Bar products are firmer in price than shapes and plates. Soft steel bars are being held at 2.00c, Chicago, for the spot market, and producers express the intention to maintain this price for third quarter. Nevertheless, eastern competition at 1.85c, Pittsburgh, and in a few cases lower, is restricting the 2.00c market for Chicago district mills. One producer is not trying to meet this competition to the south in Indiana.

Pittsburgh, May 8.—Important merchant steel bar interests report that tonnage so far this month is ahead of the first seven days of April. The first two weeks in April were disappointing to many producers but owing to the bulge in tonnage in March they really could not expect other than a drop early in April. Apparently this tonnage has been absorbed and new ordering is necessary. All buying is small and for immediate shipment, competition in deliveries being greater than in price. Specifications now being received are all against new contracts taken at 1.85c. Noncontracting customers, even when they take such attractive lots as 200 tons, are asked to pay 1.90c, but usually it is the small carload buyer who pays that figure. This is paving the way for 1.90c for third quarter but books not yet are open for that period.

Cleveland, May 8.—Soft steel bar sales are not quite up to the level of a month ago, but consumption is on a higher plane than fresh buying indicates, inasmuch as many large users are taking in material specified late in March. Ford Motor Co. is buying bars heavily. Automotive users are the chief prop of the market. Bars are 1.85c, Cleveland or Pittsburgh mill.

Philadelphia, May 8.—Although 1.85c, base, Pittsburgh, is the usual price of steel bars in attractive lots, a fair percentage of current bookings continue at 1.90c. Some consumers still are doing 1.80c on old protections.

Beehive Coke, Soft Coal Totals Under 1927

Production of beehive coke in the week ended April 28 was 92,000 net tons, compared with 87,000 tons in the preceding week and 176,000 tons in the corresponding week of 1927, states the federal bureau of mines. For the year to date output of beehive coke has totaled 1,577,000 tons, against 3,182,000 tons a year ago.

Production of bituminous coal in the week ended April 28 was 8,187,000 tons, compared with 7,917,000 tons in the preceding week and 8,424,000 tons in the corresponding week of 1927. Thus far in 1928 bituminous coal output totals 160,191,000 tons against 202,427,000 tons a year ago.

The method of buttwelding pipe was patented about 1825.

Plates

Specifications Less Active—Spot Sales Light—Chicago Mills Have Large Miscellaneous Demands

MISCELLANEOUS manufacturing requirements for plates are keeping mills in the Chicago district operating at close to capacity, and some improvement is noted in the eastern market. In general, however, plate specifications are tapering off, and spot sales also are limited. Some sellers are endeavoring to obtain 1.90c, base, Pittsburgh, in the spot market.

PLATE PRICES, PAGE 1223

Chicago, May 8.—Oil tank demand is light in the western plate market, but miscellaneous manufacturing, car shop and building needs are sufficient to keep plate mill operations at close to capacity. Smaller universal plate deliveries are lengthened four to six weeks. Mills are unable to give prompt deliveries on any plate material. Several lots of tank plates were sold during the week but this volume totaled only about 1000 tons. Inquiry from the oil districts is less than 2000 tons, except potential inquiry for several pipe lines, one of which is a 450-gas line from Indiana to St. Louis. Mills are naming 2.00c, Chicago, for current spot business, but fabricators of oil tank plates for the Southwest have been getting concessions.

Philadelphia, May 8.—Plate demand shows considerable vitality, with eastern mills maintaining operations at 50 to 60 per cent. Some improvement in bookings is noted, due to larger consumption by users manufacturing tanks and supplies for the oil trade, and also because of more active demand for certain special products made of plates. Miscellaneous demand also is better. The usual price is 2.00c, base, Coatesville, with 1.90c, done in some instances on attractive lots.

Pittsburgh, May 8.—Plate mills are receiving only a small part of the tonnage they can easily take care of. While some of them are wondering where the demand is coming from to keep plate mills engaged, the aggregate is slightly ahead of last year to the same date. In the spot market some effort is being made to obtain 1.90c, and that figure is indicated for the third quarter, but spot market sales are limited and nothing has been done with reference to third quarter contracts. After a quiet April, May promises to be more active as regards barge and tank building. Railroads continue their car repair programs, and this is taking fair size tonnages.

Cleveland, May 8.—The plate market is inactive. Tank and boiler makers

are on comparatively light schedules and shipbuilding is dormant. Plates are 1.85c, Pittsburgh.

New York Central railroad is reported to have revived its inquiry for marine equipment on which it recently took bids, including ten gasoline hoist barges requiring 2500 tons and five scows taking 500 tons.

New York, May 8.—A. Cincuilli is low bidder on 2875 feet of 48-inch, 6450 feet 36-inch and 350 feet 20-inch line type to be constructed in the Bronx for the New York city water department. The project will involve about 1300 tons of steel plates. Berwind White Coal Mine Co. has revived its recent inquiry for two colliers, involving about 6000 tons of steel each. The department of plants and structures of New York has ordered a ferryboat from Staten Island Shipbuilding Co. and the steel, about 1000 tons, will be furnished by Bethlehem Steel Co. Inquiry for 35 locomotives for Erie railroad is of interest to eastern platemakers, as about 1400 tons of plates will be required. In addition, the Erie probably will need plates to repair 75 locomotives. A considerable tonnage of plates is involved in oil tankage recently placed in this territory, the plates to be supplied mainly by Pittsburgh district mills. Some new tankage for the western Texas field now is under negotiation. On new business the price range for this territory is 2.00c to 2.05c, base, Coatesville, equivalent to 2.17½c to 2.22½c, delivered, New York. Large consumers in most instances are able to supply their requirements on old protections at lower figures.

CONTRACTS PLACED

1550 tons, Cedar river pipe line, Seattle, to Bethlehem Steel Co.; fabricating award to Puget Sound Machinery depot, previously reported.

800 tons, four steel flat-deck scows and four dump scows for New York state division of canals and waterways, to Midland Barge Co.

600 tons, five barges for Mississippi River commission, Memphis, Tenn., to American Bridge Co.

445 tons, Kittitas project syphons, Kittitas, Wash., to Pittsburgh-Des Moines Steel Co.

375 tons, one steel wharf barge for Burlington, Iowa, river rail terminal, to St. Louis Structural Steel Co.

100 tons, stand pipe for Baltimore & Ohio railroad at Whitman Junction, W. Va., to Pittsburgh-Des Moines Steel Co.

100 tons, water tanks for Oak Harbor and Coupeville, Wash., to Pittsburgh-Des Moines Steel Co.

Unstated tonnage, one barge for federal engineers at Huntington, W. Va., to Howard Shipyard & Drydock Co.

Hacksaw Standard Is Out

Washington, May 8.—The division of simplified practice, department of commerce, is circularizing manufacturers, distributors and organized users of hacksaw blades for acceptances to the simplified practice recommendation adopted April 12. It is hoped sufficient acceptances will be received to make the standard effective next July 1.

Pipe

Steel Pipe Buying Sluggish but Cast Demand Holds Good—Chicago Cast Pipe Prices Up $1

ORDINARY jobber specifications and building demands are holding pipe mill operations around 55 to 65 per cent. Line pipe at present is inactive. Cast pipe buying includes award of 2795 tons by Milwaukee. A private interest in the New York territory placed 3000 to 4000 tons. Prices on cast pipe have been increased $1 a ton at Chicago, quotations now being $31 to $33.

PIPE PRICES, PAGES 1224, 1264

Pittsburgh, May 8.—Dwelling house, apartment house and office building programs sustained over a widely scattered territory are helping to maintain general demand for standard full weight merchant pipe. Jobbers order freely, for the most part having utilized all the low-priced material which they collected prior to the last price change. Pipe mills are unable to advance their operating schedules, and these fluctuate between 55 and 65 per cent, depending upon day-to-day demand. Oil country business is still held in leash. Even gas line pipe business is not developing as rapidly as was expected.

Wrought iron pipe making is on a 70 per cent basis. Orders are numerous, although for the most part relatively small tonnages are involved.

New York, May 8.—Cast pipe demand is featured by placing 3000 to 4000 tons for a private consumer in this district and by continued inquiry from the local water department. Despite greater strength in the Birmingham district, which set the pace for this market throughout the latter part of last year, local prices continue unchanged with the market on a relatively lower scale than the southern makers.

Youngstown, O., May 8.—Tube works activities made a gain of one unit this week, against 13 last week. Buttwelded units appear the more active due to seasonal demand for smaller building pipe, but a fair amount of demand still persists for lapwelded oil well casing and line pipe.

Chicago, May 8.—Cast iron water pipe tonnage awarded through contractors during the week totaled 3000 to 3500 tons. Several of these awards totaling more than 3000 tons each are in prospect. Public utility buying is moderately active, but large municipal tonnages are slow to develop, partly due to backward weather. Sellers in this territory have advanced quotations another $1. The range for 6 to 24-inch is $31 to $33, base Birmingham. National Cast Iron Pipe Co. has just booked 500 tons of 6 and 8-inch pipe for Royal Oak, Mich., on the basis of $38.25, delivered.

Birmingham, Ala., May 8.—Deliveries against contracts of cast iron pipe are heavy, especially for pressure pipe. Soil pipe is not as active as pressure pipe. New lettings are still frequent. Quotations are firm at $30 to $31 per ton, on 6-inch and over sizes.

CONTRACTS PLACED

3000 to 4000 tons, cast pipe, private consumer in New York metropolitan district, to unstated maker.

2795 tons, 42 to 48-inch pipe for Milwaukee, to United States Cast Iron Pipe & Foundry Co.

500 tons, 6 and 8-inch pipe for Royal Oak, Mich., to National Cast Iron Pipe Co.

234 tons, 4 to 8-inch class B, Miller Cattle Co., Phoenix, Ariz., to O. F. Fisher.

111 tons, 6 and 12-inch class B sewer at Long Beach, Calif., to unnamed interest.

100 tons, 4-inch class B, Santa Rosa, Calif., to B. Nicoll & Co.

CONTRACTS PENDING

1665 tons, 6-inch class B, Los Angeles; bids in May 11.

800 to 900 tons, cast pipe for department of water supply, gas and electricity, New York; general contract awarded to Anthony Cianciulli; project also involves a tonnage of steel pipe.

600 tons, cast pipe for department of water supply, gas and electricity, general contractors' bids to be opened May 10; other tonnages for this department, as noted in last week's issue, are up for figures.

887 tons, 10 to 14-inch class 150, Lovelock, Nev.; bids in May 28.

417 tons, 6-inch class C and 8-inch class B, Pasadena, Calif.; bids in May 12.

131 tons, 10 and 14-inch class B, for sewer in Pacific Beach, San Diego, Calif.; bids in May 21.

113 tons, 4 to 8-inch class B, South Vancouver, B. C.; bids opened.

Ohio Cinder, Slag Rate Rise Rejected

Columbus, O., May 8.—Rejection by the Ohio public utilities commission of the proposal to increase by 20 cents a ton the railroad carrying rate on cinder and slag has been received with considerable satisfaction by manufacturers in eastern Ohio. The Baltimore & Ohio, the Pennsylvania and the Wheeling & Lake Erie railroads had proposed the higher rates from Cleveland, Canton, Massillon, Warren, Youngstown and Lorain to Akron and other points in the northeastern part of the state. The rate will remain at 50 cents, the same as for sand and

gravel. The proposed increase, which had been suggested in rates filed as effective Feb. 15, was suspended for 120 days by the commission pending inquiry into its fairness.

Tin Plate

Specifications Continue Active—Operations 90 to 95 Per Cent

TIN PLATE PRICES, PAGE 1223

Pittsburgh, May 8.—Active specifications enable tin plate mills to maintain the highest average operating rate noted in finished steel manufacture. Can companies are gathering in large stocks of tin plate preparatory to sustained demand. The present average is 90 to 95 per cent, with some plants running practically full. The American Sheet & Tin Plate Co. keeps slightly above 90 per cent, and a nearby interest selling to the milk packing trade is running practically full. The price still is $5.25.

Iron Ore

Shipments To Be Larger Than in 1927, on Basis of Present Indications

IRON ORE PRICES, PAGE 1224

Cleveland, May 8.—With the season's Lake Superior iron ore business now fairly well mapped out, it appears shipments this year will exceed the 52,300,000 tons of 1927, but will fall short of the 60,000,000 tons of 1926. Some operators estimate 55,000,000 tons for 1928. Many vessels now are upbound to obtain their first cargoes from the head of the lakes. There have been a few shipments from Escanaba, those in the last few days of April amounting to 5946 tons. The market is quiet after the recent selling period. A few fair size lots remain to be covered.

Buffalo Holds at 85

Buffalo, May 8.—Thirty-one of the 36 open-hearth furnaces in the Buffalo district are in operation. This is slightly less than the peak number of the first quarter, but necessary repairs rather than lack of demand for steel is responsible for the decrease. Indications point to operation of at least 85 per cent of the district's open-hearth units for the rest of May.

Intervention Permitted

Washington, May 8.—Interstate commerce commission has permitted the Pittsburgh & Lake Erie railroad to intervene in the proceedings whereby the Montour railroad, controlled by the Pittsburgh Coal Co., would gain control of the Pittsburgh, Lisbon & Western railroad and extend the latter line to the Ohio river at Smith's Ferry, O. The Pennsylvania has also become a party to the action.

Sheets

Market Still Spotty—Common Grades Stronger in Valley—$2 Reduction on Fender Stock

WHILE sheet prices show an easy tendency in most districts, the valley market appears a shade stronger with the exception of fender stock, which has been marked down $2 a ton to around 4.10c, in line with the price of 4.00c on autobody sheets. Demand for quick shipments from valley mills also is sustaining mill operations at a fairly satisfactory rate.

SHEET PRICES, PAGE 1223

Youngstown, O., May 8.—Unmistakable reversion to slightly higher tendencies is noted in the local sheet market, due to the more insistent demand by consumers for quick shipments. Less is heard of keenly competitive prices for black sheets, today's minimum being 2.75c, Pittsburgh, and the range being upward from that point to 2.80c and 2.85c on the bulk of present mill shipments. Fender stock has dropped $2 a ton to around 4.10c in sympathy with the autobody price of 4.00c. Operations are 73 per cent among independents, against 76 last week.

New York, May 8.—Sheet demand is slower than mills expected, and competition is keen. Galvanized sheets usually are 3.60c, base, Pittsburgh, but occasionally 3.55c is done. Black sheets usually are 2.75c but 2.70c is a factor. Some mills have done 2.00c, base, Pittsburgh, on blue annealed, but the rest of the trade refuses to cut 2.10c.

Buffalo, May 8.—Buffalo sheet producers are operating at about 80 per cent. Pressure is being exerted on all grades of sheets, and large tonnage can be obtained only at concessions to equal those noted in other producing centers. There is a large amount of unfilled tonnage still on steelworks' books although forward buying has slowed up.

Pittsburgh, May 8.—Specifications and shipments of sheets still are diversified, and while individual orders are small the aggregate is large. The keen edge appears to be off automotive sheet demand. For a number of producers the sheet tonnage sent out so far this year exceeds that of 1927 to the same date, and May is slightly ahead of April to the same date. Carbuilders are not taking in the tonnage they were expected to buy. Competition is no keener than during other spring seasons, but prices have lost some of their recent strength. Some business in black sheets still is being done on a 2.90c basis, but as low as 2.75c and even 2.70c continues to appear. Competition on galvanized is keener than on black, particularly in the South where sometimes offgrade corrugated roofing sheets are sold at a sacrifice. The shading of extras has developed some low figures in blue annealed, such as 1.90c. Shippers still claim to be making deliveries against 2.10c, business, but 2.05c and 2.00c has appeared in open market transactions. American Sheet & Tin Plate Co. went down to 79 or 80 per cent last week and will maintain that schedule this week. General average operations are 80 to 85 per cent.

Cleveland, May 8.—Practically no new business was done by sellers of steel sheets in this district. Inquiries are negligible. Shipments generally exceed specifications, reducing mill backlogs. Several mills selling in this district report continued operations at capacity. Black sheets are fairly common at 2.75c, Pittsburgh, although 2.80c continues the minimum of large makers. Blue annealed ranges from 1.90c to 2.00c, and galvanized is 3.65c. Autobody is firm at 4.00c.

Chicago, May 8.—Sheet prices are petition. This shading is $2 to $3 being shaded to meet eastern coma ton, but is less marked for blue annealed. Mills are forced to operate on a sprinkling of specifications. The leading independent closed its mills from Friday night until this morning, but is resuming today in full. Demand for blue annealed is better than for the lighter gages of black and galvanized, and this activity is almost the sole stimulant to operations. Operations have declined from 75 per cent to about 60. Mill prices are 2.85c to 3.00c for No. 24 black, 3.70c to 3.85c for No. 24 galvanized, and 2.10c to 2.15c for No. 10 blue annealed.

St. Louis, May 8.—A slight slowing down has been noted in specifications and new sales of sheets, as compared with the past several weeks. The easier tone in prices at Chicago and elsewhere has affected the situation here.

Pittsburgh Steel Rate 80

Pittsburgh, May 8.—Steelmaking does not average much, if anything, beyond 80 per cent here. Some mills among the larger companies are on an 85 per cent basis, but a number of the smaller ones are down to 50 per cent, another nearby mill going to that schedule in the past week, namely 6 out of 12 instead of 8 out 12. Another company north of Pittsburgh has 5 out of 10 open hearths going. At one nearby point, however, 9 out of 12 are kept active.

Gaseous products from coal were utilized for industrial purposes in 1840.

Structural Shapes

Numerous Small Awards Made During Week —Large Tonnages Less Active—Chicago Building May Take 50,000 to 60,000 Tons

STRUCTURAL steel was active during the past week, mostly from the standpoint of number of transactions. Large tonnage awards were few. Bridgework continues a feature of the market. Definite plans are being formulated for the Merchandise Mart of Chicago, estimated to require from 50,000 to 60,000 tons of structural steel. Contracts for this project are not expected for several months. A Fine Arts building also in Chicago will require 5000 tons.

Specifications against plain material continue fairly heavy with prices holding levels of 1.85c, Pittsburgh, equivalents and 2.00c, Chicago. No talk of third quarter coverage has been heard yet although prices $1 a ton higher are expected to be named.

STRUCTURAL SHAPE PRICES, PAGE 1223

Chicago, May 8.—Structural inquiry is moderate. Several new projects are appearing, but it is not likely that steel will be purchased immediately. Plans for the Marshall Field & Co. wholesale and manufacturing sales building in Chicago have been enlarged to include the housing of several hundred mercantile firms. The structure is to be known as the Merchandise Mart and is expected to need 50,000 to 60,000 tons of steel. Plans are for immediate construction but it is probable that structural steel may not be bought for several months. Fabricators' prices are being cut on building steel bids, with the result that competitive bidding brings out occasional mill prices of 1.95c, Chicago, for plain material. Mills are naming 2.00c, Chicago, for future business and announce their intention of holding to the 2.00c price for third quarter.

Boston, May 8.—Total structural tonnage awarded in the past week amounted to 441 tons, while there are 1640 tons of bridgework to be placed soon.

New York, May 8.—More than 15,000 tons of structural steel was placed this week, including a number of small tonnages awarded over the past month but just announced. Bridgework continues a feature, with inquiry including 2000 tons for the New York Central and awards 1000 tons for Lehigh Valley railroad. From point of new inquiry generally, the past week has been one of the slowest in considerable time. Prices are unchanged.

Structural steel board of trade reports 28,214 tons placed in the metropolitan New York district during April, exclusive of subways and bridges, compared with the March total of 32,239 tons.

Philadelphia, May 8.—The structural market is reported somewhat firmer in this district. In some cases consumers who were able to buy under 1.90c, base, Bethlehem, or 1.75c, Pittsburgh, now are unable to do less. Only a few consumers in this territory are paying less than these prices. The general market appears firm at 1.95c to 2.05c, base, Bethlehem, equivalent to 2.08c to 2.18c, delivered, Philadelphia, with delivered prices of 2.07c to 2.17c, based on 1.75c to 1.85c, Pittsburgh, also being quoted. Eastern shape mills are operating 60 to 80 per cent.

Pittsburgh, May 8.—Awards of structural shapes are few this week although a number will reach the closing stage between now and May 15. Spot buying of structural shapes at the 1.90c figure, which is generally quoted, is exceedingly limited but shipments are more active against 1.85c contracts this month than last. While mills have done nothing as yet regarding the third quarter, 1.90c is the price indicated for that period.

Cleveland, May 8.—Specific inquiries and awards for fabricated structural steel in the past week were light in number and tonnage. Prospective work is more encouraging, several contractors reporting more plans being figured. Considerable bridgework for the Nickel Plate railroad in connection with the Union Terminals work is in prospect. Plain material prices are pegged at 1.85c, Pittsburgh, with 1.90c the going price on small lots.

Awards Compared

	Tons
Awards this week	25,525
Awards last week	32,757
Awards two weeks ago	30,409
Awards this week in 1927	44,705
Average weekly awards, April	30,358
Average weekly awards, 1928	40,195
Total awards to date, 1927	698,563
Total awards to date, 1928	723,518

CONTRACTS PLACED

8915 tons, involved in following awards:
10-story loft, 149 Park avenue, New York,
1-story building, 241st street and Broadway, New York,
Gymnasium, 138th street and Amsterdam avenue, New York,
15-story loft, 253 West Twenty-seventh street, New York,
Queens library, Jamaica, Long Island; and 16-story loft, 227 East Forty-fifth street, New York, all going to Harris Structural Steel Co.
Column cores, 305 East Forty-sixth street, New York, and
Warehouse, for New York Dock Co., Furman and Jerolemon streets, Brooklyn, N. Y., both going to Levering & Garrigues Co.
Cox bakery, Jamaica, Long Island, N. Y.,
Extension to pier 34, New York.
Eleto warehouse, Thirty-eighth street and First avenue, New York, all going to McClintic-Marshall Co.
Garage and service station, Hempstead, Long Island, N. Y., to Lehigh Structural Steel Co.
Recreation building, for the Temple Emanuel, Port Richmond, New York, to Eidlitz & Ross.

2000 tons, Illinois county bridgework, Illinois, to unstated fabricator.
1000 tons, building for Otis Elevator Co., Harrison, N. J., to Shoemaker Bridge Co.
1000 tons, 12-story addition to office building of Byllesby Engineering & Mortgage Corp., Minneapolis, to Minneapolis Steel & Machinery Co.
1000 tons, Lehigh Valley railroad bridge, Newark, N. J., to Bethlehem Steel Co. in addition to 5500 tons awarded last week.
947 tons, bridge over San Joaquin river at Herndon, Calif., to United States Steel Products Co.
750 tons, Packard Laboratory, Lehigh university, Bethlehem, Pa., to Bethlehem Fabricators Inc.
530 tons, bridge, Springfield, Oreg., to Poole & McGonigle; general contract to Lindstrom & Feigenson as previously reported.
500 tons, building for St. Joseph's college, Brooklyn, N. Y., to unstated fabricator.
465 tons, Irene Kaufmann settlement house, Pittsburgh, to American Bridge Co.
450 tons, office, 683 Fifth avenue, New York, to Bethlehem Fabricators Inc.
405 tons, 9-story apartment, 417-27 East Fifty-first street, New York, to Easton Structural Steel Co.
400 tons, army hangars on Pacific Coast, to Belmont Iron Works.
380 tons, warehouse for Port commission, Fourteenth street, Oakland, Calif., to California Steel Co.
300 tons, Y. W. C. A., Williamsport, Pa., to Bethlehem Fabricators Inc.
250 tons, garage, 219th street and Broadway, New York, to Shoemaker Bridge Co.
250 tons, plant building for Link-Belt Co., Chicago, to Mississippi Valley Structural Steel Co.
250 tons, Bauerschnit hospital, Baltimore, to Dietrich Bros.
250 tons, power house, Pawtucket, R. I., through Stone & Webster Inc., to the New England Structural Co.
241 tons, plant addition for Blackstone Gas & Electric Co., Pawtucket, R. I., awarded to New England Structural Co.
241 tons, state bridgework in Madison county, Illinois, to A. C. Woods & Co.
206 tons, bridgework for state in Franklin county, Illinois, to A. C. Woods & Co.
200 tons, Philadelphia Rapid Transit bus terminal, Philadelphia, to McClintic-Marshall Co.
200 tons, Ogontz school, Philadelphia, to Shoemaker Bridge Co.
200 tons, Thompson's Spa building, Boston, to Palmer Steel Co.
200 tons, church, Fourth avenue and Thirty-seventh street, Brooklyn, N. Y., to Bethlehem Fabricators Inc.
200 tons, bridge, West Hampton, Long Island, N. Y., to the Tidewater Structural Steel Co., 271 Madison avenue, New York.
180 tons, Goldstein apartment hotel, Oak Park, Ill., to Gage Structural Steel Co.
180 tons, school, Quakertown, Pa., to Bethlehem Fabricators Inc.
175 tons, Reading railroad bridge, to Shoemaker

Bridge Co.
175 tons, factory building for American Brass Co., Detroit, to Pittsburgh Bridge Co.
160 tons, garage for McGough Motor Co., Montgomery, Ala., through Hodgson-Jones, contractor, to Ingalls Iron Works Co.
150 tons, high school, Briarcliff, N. Y., to Universal Iron Works.
150 tons, medical center, White Plains, N. Y., to Dreier Iron Works.
150 tons, public garage, Mt. Vernon, N. Y., to Yonkers Star Iron Works, Columbus avenue, Yonkers, N. Y.
150 tons, Hunts point library, Tiffany street and Southern boulevard, New York, to Lieder Structural Steel Co.
150 tons, school addition, Freeport, Long Island, N. Y., to Brooklyn Iron Works.
150 tons, miscellaneous small jobs, including Thornville school, Massillon, O., to Massillon Bridge & Structural Co.
150 tons, garage, Ellison and Madison streets, Paterson, N. J., to James Radcliff & Sons, that city.
125 tons, office and showroom, Newark, N. J., to Brooklyn Iron Works.
120 tons, gravel washing plant for Roquemore Gravel Co., Flomanton, Ala., to Ingalls Iron Works Co.
110 tons, church, 313 Fourth avenue, New York, to Buckingham Steel Co.
110 tons, garage, Ensley, Ala., to Ingalls Iron Works Co.
110 tons, apartment, Fillmore and Washington streets, San Francisco, to Golden Gate Iron Works.
100 tons, garage alterations, 52-54 Greenwich street, New York, to Steel & Construction Co., 690 Eighth avenue, that city.
100 tons, service station and showrooms, Mott avenue and 138th street, New York, to Kues Bros.
100 tons, school, Oceanside, Long Island, N. Y., to Berkshire Structural Steel Co., 1052 Thirty-eighth street, Brooklyn, N. Y.
100 tons, automobile showroom, 8701 Fourth avenue, Brooklyn, N. Y., to Gaynor & Rosenblum, 340 Stagg street, that city.
100 tons, grade school, Portchester, N. Y., to Portchester Iron Works.
100 tons, apartment, Larchmont, N. Y., to Easton Structural Steel Co.
100 tons, church and school, Hartsdale, N. Y., to Grand Iron Works, 525 Tiffany avenue, Bronx, New York.
100 tons, Zoological park, Chicago, to United Wire & Iron Works.
100 tons, Bon Marche department store, Seattle, to Wallace Bridge & Structural Steel Co.
100 tons, apartment, Sixty-ninth street, Philadelphia, to S. G. Mathews.
100 tons, hangar for United States marines, Corinto, Nicaragua, to Maryland Metal Building Co.
100 tons, building for A. C. Spark Plug Co., Flint, Mich., to Flint Structural Steel Co.
100 tons, high school, Defiance, O., to Massillon Bridge & Structural Co.
100 tons, club house, Newburg, N. Y., to Hudson Valley Bridge Co., New Windsor, N. Y.

CONTRACTS PENDING

5000 tons, Fine Arts building, Jackson park, Chicago.
3600 tons, court house at Denver; plans prepared.
3000 tons, bridge for Missouri-Pacific railroad at Little Rock, Ark.; American Bridge Co., low bidder.
3000 tons, Lake Champlain bridge, Ticonderoga, N. Y.; bids opened May 8.
2500 tons, Glenview Jockey club, Chicago.
2000 tons, garage at Lake and Dearborn streets, Chicago; steel bids soon.
2000 tons, Y. M. C. A. building, Philadelphia; project revived.
2000 tons, bridges for New York Central railroad.
1500 tons, French apartments, Tudor City development, New York.
1000 tons, dressed meat plant for Swift & Co. at St. Louis.
1000 tons, passenger station for New York Central railroad, South Bend, Ind.
800 tons, bridge for Boston & Maine railroad at Biddeford, Me.
700 tons, bridge for Boston & Maine railroad, Lowell, Mass.
600 tons, Lake Shore apartments, Cleveland; John Gill & Sons, that city, awarded general contract. Being refigured to reduce steel tonnage.
400 tons, 3-story building for Hilton Clothing Co., Nassau and Ann streets, New York.
400 tons, factory, Newark, N. J., Walter Kiddie, general contractor; structural bids asked.
400 tons, Masonic temple, Hastings, Neb.
300 tons, bridges for Chesapeake & Ohio railroad.
250 tons, apartment, Kenmore and Wilshire boulevard, Los Angeles; bids being received.
225 tons, Mt. Washington Presbyterian church, 204th street, New York.
200 tons, highway bridges for New Hampshire; bids asked.
200 tons, state highway bridges, Michigan.
175 tons, steel girder bridge replacing wooden truss superstructure, Martin county roadwork, Florida; bids in May 15 by board of county commissioners.
160 tons, state highway bridge at Dewitt street, Portage, Wis.; bids close May 15.
160 tons, hotel, Seventeenth street, Oakland, Calif.; bids being received.
150 tons, Kings Highway Savings bank, Brooklyn, N. Y.
140 tons, bridge, Bristol, N. H.
140 tons, office building, Fifteenth and Webster streets, Oakland, Calif.; bids in.
125 tons, office building, Pine and Leisdorff streets, San Francisco; bids received.
100 tons, building for Walker Bros., Spring Mill, Pa.
100 tons, plant addition for American Banknote Co., Brooklyn, N. Y.; previously noted as unstated tonnage.
Unstated tonnage, Fur Merchants building, 238 West Twenty-eigth street, New York.
Unstated tonnage, 17-story building, 259 West Thirtieth street, New York; Sugerman & Berger, architects.
Unstated tonnage, 10-story apartment, South Munn street, East Orange, N. J.; Harold Clark, Newark, N. J., architect.
Unstated tonnage, postoffice at Donora, Pa.; bids in May 29 by James A. Wetmore, treasury department, Washington, acting supervising architect.
Unstated tonnage, postoffice at Olyphant, Pa.; bids in May 31 by James A. Wetmore, treasury department, Washington, acting supervising architect.
Unstated tonnage, grade elimination work for Nickel Plate railroad in conjunction with rapid transit work of Cleveland Union Terminals Co., Cleveland; being contemplated.

Concrete Bars

Awards of 2500 and 2100 Tons Feature Week's Activity—Prices Easier

CONCRETE bar awards of the week were featured by 2500 tons of terminals work at Cleveland and a 2100-ton bridge at New Brunswick, N. J. Inquiries indicate a continuation of heavy buying during the next 30 to 60 days. Competition from barge shipments from Buffalo into the New York district, at a freight advantage of $3.80 per ton, is tending to weaken that market.

REINFORCING BAR PRICES, PAGE 1223

New York, May 8.—Barge shipments from Buffalo now are an important factor in the concrete reinforcing bar market. It is understood the rate on bars for shipment by barge from Buffalo to New York harbor is 15 cents per 100 pounds, against a rail rate from Pittsburgh of 34 cents. The difference between these rates is $3.80 per ton, and it is believed this factor is to some extent responsible for an easier price tendency here. The market on mill shipments now may be quoted at 1.90c to 2.00c, base Pittsburgh, or 2.24c to 2.34c delivered New York, and indications are that the material coming down by barge went at less. The largest job placed here for some time went during the past week, involving 2100 tons for a bridge at New Brunswick, N. J.

Pittsburgh, May 8.—The largest award of the week in the reinforcing concrete bar market is that of the Erie railroad bridge at Big Bend, Pa., taking 250 tons. A number of awards of similar character are scheduled for letting between now and May 15.

Awards Compared

	Tons
Awards this week	11,061
Awards last week	4,290
Awards two weeks ago	10,590
Awards this week in 1927	6,600
Average weekly awards, April	10,522
Average weekly awards, 1928	7,985
Total awards to date, 1927	93,436
Total awards to date, 1928	143,737

Sellers report an exceedingly active week in small jobs, and inquiries involving less than a single carload are growing in number as the better weather advances. The new billet price is unchanged at 1.85c to 1.90c.

Cleveland, May 8.—Cleveland Union Terminals work again featured the concrete bar market, with an award of 2500 tons to Bourne-Fuller Co. for substructure work on a group of buildings including the medical arts, mercantile and garage units. Inquiry has been issued for the superstructure of these buildings, probably requiring an equally large or larger tonange. Other awards and inquiries were few and small. New billet bar prices continue 1.80c to 1.90c, Cleveland, with 1.85c to 1.90c, Pittsburgh being quoted into competitive territory.

Boston, May 8.—Between 200 and 300 tons of reinforcing steel was placed during the past week. Several jobs are being figured but they have not reached the awarding stage. A proposed new building at Federal, Franklin and Congress streets, may take 500 to 600 tons. Prices are inclined to be a trifle soft, though mills are holding firm.

Chicago, May 8.—Sales of rail steel reinforcing bars are heavy. About 400 tons each have been closed for the Foreman National bank building and the Carbon & Carbide building, Chicago. Recently distributers of billet bars have been faring better in small-lot orders. Prospects are good for an active building season in the Northwest with advantageous weather. Large tonnages bring out prices as low as 2.15c for billet reinforcing bars.

Rail steel bars are unchanged at 1.85c for building and 1.95c for road work.

Cincinnati, May 8.—Manufacturers of reinforcing bars report business as dull. Buyers await the advent of much new building.

CONTRACTS PLACED

2500 tons, substructure work for medical arts, mercantile and garage units of Cleveland Union Terminals Co. building work, Cleveland, to Bourne-Fuller Co. Bids to be taken soon on unstated tonnage for superstructure.
2100 tons, Raritan river bridge, New Brunswick, N. J., to Kalman Steel Co.
1000 tons, Peck & Hills warehouse, Seattle, to Northwest Steel Rolling Mills.
800 tons, billet steel, Daily News building, Chicago, to American System of Reinforcing; previously reported to unstated fabricator.
500 tons, New York piers for Hudson river bridge, to Truscon Steel Co.
400 tons, Kezar stadium, San Francisco, to Gunn, Carle & Co.
400 tons, foundations for Capwell store, Oakland, Calif., to unnamed interest.
400 tons, rail steel, Foreman National Bank building, Chicago, to Inland Steel Co.
400 tons, rail steel, Carbon & Carbide building, Chicago, to Inland Steel Co.; Paschen Bros., general contractors.
350 tons, city waterworks department, Aurora, Ill., to unstated fabricator.
350 tons, two new Sears, Roebuck & Co. stores at St. Louis, 175 tons each, to Laclede Steel Co.
300 tons, rail steel, Illinois road work, to Calumet Steel Co.
275 tons, school at Eleventh and Thompson streets, Philadelphia, to American Steel Engineering Co.
250 tons, Erie railroad bridge at Big Bend, Pa., to Concrete Steel Co.
175 tons, hospital, Cumberland, Md., to Dietrich Bros.
160 tons, warehouse, Jamaica, L. I., N. Y., to Jones & Laughlin Steel Corp. through National Bridge Works.
150 tons, apartment house, Delman boulevard, St. Louis, to Laclede Steel Co.
150 tons, reservoir, Towson, Md., to Kalman Steel Co.
150 tons, road steel, route 97, McKean county, through Fred Ross, general contractor, Bradford, Pa., to Truscon Steel Co.
120 tons, storm sewer, Oakland, Calif., to Badt-Falk Co.
115 tons, building for Peoples Gas Light & Coke Co., Chicago, to Concrete Steel Co., previously reported to Concrete Engineering Co.
115 tons, state highway work, to Northwest Steel Rolling Mills.
110 tons, building for Packard Motor Car Co., Pittsburgh, to Kalman Steel Co.
106 tons, firewall for Union Oil Co., San Francisco, to Pacific Coast Steel Co.
100 tons, pumping station, City sanitarium, St. Louis, to Missouri Rolling Mill Co.
100 tons, Shepherd Pratt hospital, Baltimore, to Concrete Steel Co.
100 tons, Teachers college, Fresno, Calif., to unnamed interest.
100 tons, bridge over San Joaquin river at Herndon, Calif., to unnamed interest.
100 tons, building for Illinois Bell Telephone Co., Gary, Ind., to Concrete Steel Co.
100 tons, miscellaneous business including small building for Mine Safety Appliance Co., Pittsburgh, to Carlem Engineering Co.

CONTRACTS PENDING

2000 tons, North station, Boston & Maine railroad, Boston.
400 tons, roadwork for Connecticut.
350 tons, roadwork for New Hampshire.

The Moffat tunnel, 50 miles from Denver, is 6.1 miles long, 16 feet wide and 24 feet high. Construction was started Sept. 1923 and the first train passed through Feb. 26, 1928.

Rails, Cars

Miscellaneous Car Activity Increasing—Secondary Rail Buying Light—Track Mills Full

RAILROAD equipment activity of the past week was confined to small transactions, but the total was heavier than for many weeks. The Chicago, St. Paul, Minneapolis & Omaha extended its inquiry to 800 freight cars. New York Central and Pennsylvania car inquiries are expected before July 1. Canadian Pacific has placed 25 locomotives with an American maker.

RAILROAD TRACK PRICES, PAGE 1224

Chicago, May 8.—Secondary buying of standard steel rails is light, only a few miscellaneous lots having been placed during the week. Mills believe this secondary buying will approximate the proportion of the past several years, but it is not expected this buying movement will become active for 30 to 60 days. Secondary buying usually develops in full force about July 1. Rail mill operations are continuing at 90 per cent and no indication is seen that this activity will decline before 60 days.

Miscellaneous orders of track fastenings amount to about 4500 to 5000 tons. Miscellaneous lots are on inquiry including 1000 tons of tie plates and 2500 to 3000 kegs of spikes and bolts. Track fastenings departments are engaged at practically full capacity.

No important car inquiry is appearing before the Western market but reports are heard that inquiries of the New York Central and Pennsylvania railroads will be out by July 1. The preliminary inquiry for 200 flat cars issued by Chicago, St. Paul, Minneapolis & Omaha has been extended to include 800 miscellaneous freight cars.

Buffalo, May 8.—Reconstruction and modernization of Bethlehem's rail mill at Lackawanna will be started about July 1, and will require two months or more for completion. Production of rails will be transferred to other plants of the company during the modernization. A full schedule has been alloted the Lackawanna plant up to the time of suspension.

New York, May 8.—Car buying the past week has been confined to a fairly good volume of relatively small orders, involving more than 600 freight cars. Canadian Pacific has ordered 25 locomotives.

Pittsburgh, May 8.—While occasionally an order for three carloads of light rails at a time appears, this is the exception, the rule being a single minimum carload. What business transpires in this product is at the $36 figure, makers being unwilling to offer concessions.

Producers of spikes, tie plates, etc., are making fairly large deliveries against contracts but new buying is exceedingly limited. Prices, however, are unchanged and firm at 2.80c for spikes and 2.15c for tie plates. Shipments are regular against track bolt contracts at $3.80 to $4. Jobbers pay 70 per cent off list.

CAR ORDERS PLACED

Amtorg Trading Corp., 165 Broadway, New York, 16 flat cars, to Magor Car Corp.
Canadian Pacific, ten sleeping car frames, divided equally between Canadian Car & Foundry Co., and National Steel Car Corp.
Chicago, Burlington & Quincy, rebuilding 250 ballast cars, to its Galesburg, Ill., shops.
Chicago & North Western, 300 general service cars, to Siems-Stembel Co.
Northwestern Refrigerator Line, 100 underframes to American Car & Foundry Co., in addition to 500 refrigerator cars placed with the same company, 100 refrigerator cars, to own shops.
North American Car Co., 200 poultry cars, to Standard Steel Car Co.

LOCOMOTIVE ORDERS PLACED

Canadian Pacific, 25 locomotives, to American Locomotive Co., through Montreal Locomotive Works Ltd.; 11 snow plows, to its Angus shops.
Great Northern, two electric locomotives, to be built jointly by Baldwin Locomotive Works and Westinghouse Electric & Mfg. Co.

CAR ORDERS PENDING

Chicago & North Western, 200 flat cars; bids asked.
Chicago, St. Paul, Minneapolis & Omaha, 800 miscellaneous freight cars; including 200 flat cars previously announced.
Chicago Rapid Transit, 100 motor cars and 100 trailers; inquiry withdrawn temporarily.
Kansas City, Mexico & Orient, 100 box cars; bids asked.
Midland Utility Co., 15 motor and five trailer cars; inquiry withdrawn temporarily.
Pacific Electric, ten street cars.

German Foreign Trade Up

Washington, May 8.—German imports and exports of iron and steel both gained decidedly in March. Exports at 380,826 metric tons were the highest thus far in 1928 while imports, totaling 189,176 tons, increased appreciably over February. In the first quarter German exports have amounted to 1,045,789 tons and imports 573,301 tons. At the end of March 113 blast furnaces or two less than at the end of February were active.

Erie City Iron Works has moved its Pittsburgh office from the Park building to 645 Oliver building.

Wire

Nail Shipments Light While Wire Is Slow Because of Heavy Jobber Stocks

SLACK demand for nails continues and production at Chicago has dropped 5 per cent. Wire and wire products are somewhat slow because of belated spring weather in the west. Pittsburgh producers are holding the full nail quotation but in some other sections concessions are made. Jobbers have stocks which are a drag against new buying from mills.

WIRE PRICES, PAGE 1224

Pittsburgh, May 8.—While shading of the $2.65 nail base is reported in other sections, mills here continue to adhere strictly to that base and some business is accruing each week. Needs are relatively small as some jobbers still have lower price material which they are working off. They claim that the season is late and that the turnover is not as rapid as usual. One or two report the sale of a few mixed carloads during the past few days, in each case at $2.65 for nails. Specifications against manufacturers' steel wire contracts are active and shipments fairly heavy on the basis of 2.50c. Wire products mills still operate at 50 per cent.

Worcester, Mass. May 8.—Demand for wire and wire products continues at steady prices. Specifications are limited, but slightly more numerous. Shipments in some instances are heavier than bookings. Diversified demand and a steady movement of specialties and manufacturers' wire is a feature. Highway building calls for a large volume of mesh. Mill production holds up well, although in spots it is reported easier. Nails are slow and weak. Export trade continues satisfactory and is a decided factor in this market. Plain wire is firm at 2.65c, Worcester, base.

Buffalo, May 8.—Road builders are contracting freely for their needs and large shipments of welded mesh are being made to all districts. Wire mills are working at 80 to 85 per cent of capacity. Fence production has helped increase tonnage produced here.

Chicago, May 8.—While woven wire fencing continues active and buying of barbed wire moderately strong, the general wire products market is quiet. Orders are fairly good from the South and Southwest but in Missouri river territory jobber stocks are ample and are moving slowly because of the late season. Mill shipments of nails are light. Operations of western mills have declined about 5 per cent in the past month and now are 65 to 70 per cent. Few buyers pay $2.70 for nails. The range usually is $2.60 to $2.65, Chicago or western mills. Bright plain wire is 2.55c.

Cleveland, May 8.—An improvement in the nail and wire price situation is noted in recent quoting for business in this territory by leading mills. The tendency to meet competition from smaller makers is less noticeable, and $2.60, Cleveland, per 100-pound keg is minimum for most business in the territory while the local price of $2.65 is firm. Plain wire is steady at 2.50c, Cleveland. A number of carload sales were made in the district during the week.

Cold Finished Steel

General Demand Makes Up for Lessened Automotive Tonnage

COLD FINISHED PRICES, PAGE 1223

Pittsburgh, May 8.—Cold finished bar producers, in the absence of sustained automotive demand, are depending upon diversified industries for sufficient business to maintain average operations of 70 to 75 per cent. While most automotive tonnage is less than during first quarter, some small lots develop each week, and this with the demands of machinery builders and other users makes it seem possible that May shipments will at least keep up to those of April. The price is unchanged at 2.20c.

Cleveland, May 8.—Demand for cold finished bars, especially specifications on second quarter contracts, holds up to the April level. Heavy inquiries from a Detroit low price automobile manufacturer lend added interest to the market. Releases are expected to stimulate further buying. Some tendency to ease off from other automotive buyers is expected as the model changing period approaches. Prices are firm at 2.25c, Cleveland.

Strip Steel

May Tonnage Surprises Makers by Keeping to High Mark

STRIP PRICES, PAGE 1224

Pittsburgh, May 8.—May tonnage in hot and cold strip steel is ahead of April to the same date. This is encouraging to makers since it was thought that in April more steel was put into stock than consumptive requirements dictated. Apparently, strip steel use is on a higher level than makers supposed. Cold strips still are quoted at 3.00c to 3.15c, base, (2.75c to 2.90c for three tons or more) and orders are from diversified users. This is true also of hot strip although in this product the recent price has practically disappeared as far as the maximum is concerned, and 2.10c to 2.20c now is being named on narrow widths, 2.00c to 2.10c on the intermediate, and 1.80c to 1.90c or 2.00c on the wide. Operations average 80 to 85 per cent.

Cleveland, May 8.—New business in the hot strip market is confined to small miscellaneous lots. Specifications are being received by a few mills in sufficient quantity to maintain capacity operations, but shipments generally are exceeding releases. Prices practically have reverted back to first quarter levels on contract tonnage, 1.75c, Pittsburgh, being offered to large buyers. Small lots continue to move up to 1.90c on 6 to 12-inch, with up to 2.40c being quoted on less than 3-inch. Automotive requirements have not yet eased off. Cold strip prices are firm at 2.75c to 3.00c, depending upon tonnage involved. Prices on contract tonnage have not all been marked down below 2.90c.

Stack Out at Chicago But Steel Rate 95

Chicago, May 8.—Steelworks blast furnace activity has been reduced in the Chicago district with the blowing out of one of the two Indiana Harbor steelworks furnaces of the Youngstown Sheet & Tube Co. for repairs. This leaves 28 out of the 36 steelworks furnaces of the district active. The reduction in the number of furnaces does not materially affect the ingot rate as several producers are using more cold metal. It is estimated that operations still are 95 per cent for the district. Bar, plate and rail mill operations are above 90 per cent.

Galvanizing Unit Ready

Mansfield, O., May 8.—Empire Steel Corp. has completed the installation of three galvanizing pots at the former Falcon Steel Co. plant at Niles, which will be the galvanizing unit of the corporation. The equipment will take sheets of all gages up to 48 to 50 inches wide. J. D. Waddell, vice president of the corporation, is in charge of galvanizing operations. Sales will be handled by the corporation's regular sales organization.

Directors Re-elected

New York, May 8.—Directors of the American Iron and Steel institute whose terms expire this year were re-elected, to serve until 1931. They include E. A. S. Clarke, W. H. Donner, W. J. Filbert, T. M. Girdler, Samuel Mather, I. M. Scott, John A. Topping and George M. Verity. Mr. Girdler was elected in March to succeed Willis M. King, and Mr. Verity in January to succeed the late Joseph G. Butler Jr.

Nonferrous Metals

Heavy Shipments Support Prices in Face of Light Buying—Indications Point to Good Demand Developing for Early Delivery

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York June	Lead—New York	Lead—East St. Louis	Zinc—St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
May 2	14.25	14.35	13.95	51.50	51.12½	6.10	6.00	5.87½	23.90	10.37½	35.00
May 3	14.25	14.35	14.00	51.87½	51.75	6.10	6.00	5.87½	23.90	10.50	35.00
May 4	14.25	14.35	14.00	51.62½	51.37½	6.10	6.00	5.87½	23.90	10.62½	35.00
May 7	14.25	14.35	14.00	51.25	51.00	6.10	6.00	5.92½	23.90	11.12½	35.00
May 8	14.25	14.37½	14.00	51.25	51.00	6.10	6.00	6.00	23.90	11.12½	35.00

NEW YORK, May 8.—Zinc and antimony are especially strong, tin a little easy but not much changed, while copper, lead, aluminum and nickel are practically unchanged from a week ago.

Shipments of all the metals are of good size, and the fact that sales in most lines are not especially active just now does not affect the markets. Indications point to good buying still to be done for June shipment. Brass and copper mill products remain unchanged, the former on the basis of 14.00c for ingot copper and the latter 14.25c.

Copper—Some business was done on the basis of 14.25c, Connecticut, the past week but in the past few days the market has been quiet, although firm. Business was divided between May and June. Moderate export sales continued at 14.50c, c.i.f. European ports, so the two markets are on par. Shipments continue large and there is an air of confidence about the market.

Zinc—Prime western zinc has shown the most strength in some time. Sentiment has helped the market along more than any increase in buying. On the other hand smelters have been well enough booked so that they have not had to push the market and this fact has been important. After talk for some time about 6.00-cent zinc, the market has hit that level. The buying has been largely for prompt. High grade metal is unchanged and active.

Tin—This metal has continued in an uncertain market with price changes narrow and buying light. Lack of consumer interest is one of the troubles of the market. Supplies are plentiful and users are holding off as long as possible. Consumption is of good size here and in Europe, but there is less certainty that it will continue so than that production will continue large. The range between spot and futures has narrowed. The Far East has been a free seller at the lower price of the past week.

Aluminum—Business has been active for prompt shipment lately. There also have been good specifications against old orders. Prices are firm all through the list.

Lead—New buying has been limited and of routine nature lately. Prices have held steady.

"The French Market for Industrial Machinery," is the title of trade information bulletin No. 543 just issued by the bureau of foreign and domestic commerce, Washington. The report was prepared by Franklin P. Waller, assistant trade commissioner, Paris, and is a survey of the development of the French industrial machinery market and a detailed study of the various types of machinery absorbed there. Copies of the bulletin may be obtained for 10 cents each.

Mill Products

Base prices cents per pound f.o.b. mill

SHEETS	
Yellow brass (high)	18.75
Copper, hot rolled	23.00
Lead, full sheets (cut ¼c more)	9.75
Zinc (100-pound base)	9.00
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.30
SEAMLESS TUBES	
Yellow brass (high)	23.62½
Copper	24.50
RODS	
Yellow brass (high, full turning)	16.50
Naval brass	19.25
WIRE	
Copper, car lots	15.75
Yellow brass (high)	19.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25
Chicago	9.25 to 9.50
Cleveland	9.50 to 10.00
HEAVY YELLOW BRASS	
Chicago	6.75 to 7.00
Cleveland	7.25 to 7.50
ZINC	
New York	3.50
Cleveland	3.00 to 3.25
HEAVY COPPER AND WIRE	
New York	11.50 to 11.75
Boston	11.00 to 11.75
Chicago	10.75 to 11.00
Cleveland	11.50 to 11.75
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.50
LIGHT COPPER	
New York	10.00 to 10.25
Chicago	9.50 to 9.75
Cleveland	10.00 to 10.25
LIGHT BRASS	
Boston	5.75 to 6.00
Chicago	6.25 to 6.50
Cleveland	5.50 to 5.75
ALUMINUM	
Clippings, Cleveland	17.50
Borings, Cleveland	9.50
Cast, Cleveland	13.00
Cast, Boston	11.50 to 12.00

Secondary Metals

Remelt Aluminum No. 12	16.50 to 17.00
Brass ingot, 85-5-5-5	12.25 to 12.50

Coke By-Products

Export Demand Aids Sulphate—Toluol and Benzols Move Well

New York, May 8.—Waning domestic buying of sulphate of ammonia is partially offset by fairly good export buying, particularly for China, Japan and Porto Rico, this latter business going at $2.20 to $2.25, port, for material in double bags. The domestic market still is holding at $2.35 delivered. Sellers look for little further domestic buying before July 1, and possibly not much before Aug. 1.

Distillate demand still is featured by brisk trading in toluol and in a somewhat lesser degree in benzols. Trading in solvent naphtha and commercial xylol is relatively small, but steady. Prices are changed. Naphthalene is less active, although prices are the same.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contracts
Pure benzol	$0.22	.....
90 per cent benzol	0.22	.....
Toluol	0.35	.....
Solvent naphtha	0.30	.....
Commercial xylol	0.30	.....
Phenol	0.17 to 0.18	.....

Per Pound at Producers' Plants

Naphthalene flakes	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.35

Quicksilver More Active

New York, May 8.—Quicksilver is steady at $123.50 to $124 a flask. Buying has picked up somewhat after a slow spell.

Stocks of metal in United States bonded warehouses at the beginning of March totaled 438,664 pounds, a decline compared with 488,026 pounds at the beginning of February.

Warehouse

Sales Continue at April Rate with Building Materials Leading Demand—Prices Revised at Baltimore—Sheets Off at New York

SALES from iron and steel warehouses continue at the April level although some districts mark lessened buying. Building materials, especially shapes, bars and sheets are in good demand. Prices have been revised at Baltimore. Sheet prices have eased off at New York and Cleveland.

Jobbing demand in the New York metropolitan district is being fairly well maintained, with particular activity in structurals. The price situation is featured by further reductions in sheets, galvanized now being quoted generally at 4.50c and blue annealed at 3.80c. These further reductions are a partial reflection of easier mill prices.

Further gains have been made by Philadelphia jobbers in their effort to get away from the ruinously low prices which prevailed over so long a period. Jobbers who specialize on structurals have been much impressed by the quantity differentials on steel bar sales and it is thought likely that it will not be long before quantity differentials are applied to shapes and plates as well as to the products against which they now are in force. Modifications have been made whereby extras which formerly were waived now are being charged.

The firmer tendency in prices out of Baltimore jobbing stocks has crystallized in a notable advance affecting almost all products. On plates, shapes and bars, jobbers generally now are quoting 3.10c base, delivered locally. Cold finished steel has been advanced $2 a ton. Blue annealed sheets now are 3.45c, or $9 above the recent minimum. This, however, is not quite as impressive as the advance in bars, plates and shapes, the new 3.10c price being $12 or more a ton above the recent minimum. On steel bands the new price is 3.85c, also a material advance.

Most Pittsburgh jobbers are experiencing a lighter demand for warehouse production than last month. Some report a fairly well sustained shipping rate of steel used in building construction. Ornamental iron workshops buy freely. Sheets also are quieter, and weakness in prices links itself onto the lowered mill bases to the extent of about $2 per ton.

Orders for warehouse materials have been numerous at Buffalo, but the total volume of business shows no decided gain as compared with April. Building material is the best seller at present.

(*Concluded on Page* 1239)

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York† ††	3.20c to 3.25c
Philadelphia*	2.50c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.06c

IRON BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York†	2.80c to 3.24c
Philadelphia*	2.50c
St. Louis	3.15c
Tulsa	3.75c to 4.06c

REINFORCING BARS

Baltimore	2.80c to 3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.20c
Detroit	3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	3.05c
Los Angeles lcl.	3.30c
New York	2.95c to 3.10c
Philadelphia	2.30c to 2.80c
Pittsburgh	2.90c to 3.175c
San Francisco cl	2.85c
San Francisco lcl.	3.10c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.25c
Houston	3.25c
Los Angeles	3.30c
New York†	3.25c to 3.30c
Philadelphia	2.40c to 2.80c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

PLATES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York†	3.25c to 3.30c
New York† (floor)	5.05c to 5.10c
Philadelphia	2.40c to 2.80c
Phila., 3/16-in.	2.60c to 3.00c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

No. 10 BLUE ANNEALED

Baltimore	3.45c
Boston, 3/16-in.	3.915c
Buffalo	3.70c
Chicago, to 40 in.	3.50c
Chicago, over 40 in.	3.60c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.50c
Ft. Worth	4.70c
Houston	3.90c
Los Angeles	4.00c
New York	3.90c
Portland	4.00c
Philadelphia	3.15c
Pittsburgh**	3.00c to 3.10c
San Francisco	3.75c
Seattle	4.00c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.20c to 4.56c

No. 24 BLACK SHEETS

Baltimore	3.60 to 4.00c
Boston	5.00c
Buffalo	4.20c
Chicago	3.95c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	4.10c
Ft. Worth	4.70c
Los Angeles	5.10c
New York	3.80c
Philadelphia*†	4.00c
Pittsburgh‡	3.65c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.45c
St. Paul	3.95c
Tulsa	4.75c

No. 24 GALVANIZED SHEETS

Baltimore	4.30c to 4.75c
Boston	5.85c
Buffalo	5.05c
Chicago	4.80c
Cincinnati	4.90c
Cleveland	4.50c
Detroit	4.90c
Ft. Worth	5.75c
Houston	5.30c
Los Angeles	5.50c
New York	4.50c
Philadelphia*†	4.75c
Pittsburgh‡	4.50c
Portland	5.65c
San Francisco	5.50c
Seattle	5.75c
St. Louis	5.25c
St. Paul	4.90c
Tulsa	5.55c

BANDS

Baltimore	3.85c
Boston	4.015c to 5.00c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.65c
Ft. Worth	4.40c
Houston	3.65c
Los Angeles	4.25c
New York†	4.00c
Philadelphia	3.35c
Pittsburgh	3.60c
Portland	4.00c
San Francisco	4.00c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	4.15c
Cincinnati	4.40c
Cleveland	3.65c
Detroit	4.15c
New York†	4.50c
Philadelphia	3.60c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds, hexagons, squares	Flats, squares
Baltimore	3.35c	3.85c
Boston	3.45c	3.95c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.40c	3.90c
Philadelphia	3.35c	3.85c
Pittsburgh	3.60c	4.10c
Portland (a)	5.00c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.66c	5.16c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.00c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	14.00c
Iron bars, rounds	6.25c
Flats and Squares	
Baltimore, New York, Phila.	6.60c

*Plus quantity differentials. †Minus quantity differentials. ††Domestic bars. ‡10 to 24 bundles. **25 or more sheets. *†50 or more bundles.

Pipe Active on Coast

Concrete Bars Also in Demand—Foreign Pig Iron and Coke Arrive

SAN FRANCISCO, May 5.—(*By Air Mail*)—Increased demand for cast iron pipe and more numerous awards of concrete bars were the features of the market this week. In addition a number of new structural steel projects have come up for figures. With the exception of reinforcing steel bars in the San Francisco district, prices generally are holding to the levels established some time ago.

Pig Iron and Coke

Foundry operations, especially among jobbing shops, have not speeded up much in the past month or two and sales and inquiries have shown little improvement. During the past week a shipment of 1400 tons of Indian iron arrived, Los Angeles and San Francisco melters taking most of it. A few hundred tons of this shipment was reshipped to Portland and Seattle. Approximately 4500 tons of English beehive and by-product foundry coke has arrived and part is now being unloaded at Los Angeles, the remainder to be delivered to bay district foundries. No changes in prices are noted.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00
*Dutch	24.50

*C.i.f. duty paid.

Bars, Plates and Shapes

Concrete bar awards were more numerous this week and aggregated 3430 tons, bringing the total for the year to 40,578 tons, compared with 17,771 tons for the corresponding period in 1927. Four hundred tons for the Kezar stadium in San Francisco was booked by Gunn, Carle & Co., and 400 tons for the Capwell store foundations in Oakland, went to a San Francisco jobber. Most of the pending business involves small lots. Out-of-stock prices in the bay district continue exceptionally low and better than 2.00c is still being quoted.

An award on the Wildcat and Sequoia aqueducts in Oakland, involving over 8000 tons of plates, is expected to be announced within the next few days. No decision has yet been reached regarding the type of pipe to be used. Bids will be opened next week on 650 tons for a dredge and two scows for the state harbor commission at San Francisco. Bids were opened on 115 tons for a 48-inch pipe line at Tacoma but no award has yet been made. An inquiry for 500 tons of 3/16 and ¼-inch plates has been received. Awards so far this year total 12,254 tons, compared with 37,820 tons for the same period last year. Prices remain firm at 2.30c c.i.f.

Structural shape awards totaled 1696 tons and included 947 tons for the Herndon, Calif., bridge, booked by the United States Steel Products Co., and 380 tons for a warehouse for the port commission at Oakland, taken by the California Steel Co. Awards to date this year aggregate 37,876 tons, compared with 72,145 tons for the corresponding period in 1927. New inquiries this week total over 3600 tons and pending business now exceeds 15,000 tons. Plain material from domestic sources continues firm at 2.35c c.i.f.

Other Finished Material

Demand for cast iron pipe has improved and while awards were not numerous this week, some good-sized lots have come up for figures. To date this year 34,116 tons have been placed, compared with 37,200 tons for the same period last year. O. Fisher, Phoenix, Ariz., booked the largest award, 234 tons for the Miller Cattle Co., Phoenix, Los Angeles, Lovelock, Nev., and Pasadena, Calif., have come into the market for 1665 tons, 887 tons and 417 tons respectively. Pending business now exceeds 38,000 tons. Standard pipe bookings were confined to relatively small tonnages and no large inquiries are up for figures.

Demand for sheets is spotty and current sales and inquiries involve small lots only with one exception. The Kittle Mfg. Co., Los Angeles, has an inquiry out for 400 tons of black sheets for license plates, having just been awarded the Texas contract for 1,200,000 pairs of plates.

Seattle Price Firm

Largest Steel Cargo Sent by Bethlehem Steel Corp.

Seattle, May 2.—General business conditions in the Pacific Northwest are steady although no unusual activity is noted. Steel prices are holding firm, there seems less disposition to cut and foreign materials are giving less concern. Ocean freights are weak and this condition is reflected in the hesitancy of foreign buyers to place new business here.

The Weyerhaeuser Timber Co. has awarded contracts to a number of foundries about 800 tons of saw mill machinery. The same firm is about to place orders for more than 500 motors, totaling 10,000 horsepower. This equipment is for the lumber plant under construction at Longview, Wash.

The Calmar line's motorship CUBORE is on this coast distributing 11,526 tons of steel products said to be the largest cargo of steel ever brought to this Coast in one bottom. For Seattle 1500 tons are included and for Bellingham a large shipment of tin plate. President E. G. Grace of the Bethlehem Steel Co. is expected in Seattle within a few days to go over plans for the proposed steamship terminal and storage warehouse here.

Bars, Plates and Shapes

Mill prices are unchanged, bars and shapes at 2.35c and plates firm at 2.30c. Local prices for reinforcing are about 2.20c, this item reflecting a firmer tone than for some time.

Local steel mills are operating steadily, there having been a heavy run of small tonnages during the last month. Carload lots and less have featured recent buying although several large jobs are still pending. Awards this week were in excess of 1200 tons. The largest job, 1000 tons or more for the Peck & Hills warehouse, Seattle, was taken by Northwest Steel Rolling Mills. The same firm also booked 115 tons for a state highway job. Bids will be opened May 15 for unstated tonnage involved in a viaduct at Mt. Vernon.

The local office of the Pittsburgh-Des Moines Steel Co. has received confirmation of award for furnishing 445 tons of plates for syphons at the Kittitas project. The same company also has taken contracts for furnishing steel water tanks and towers for Oak Harbor and Coupeville, Wash., involving approximately 100 tons. Bethlehem Steel Co. will furnish 1550 tons for the Seattle-Cedar river water line, which will be fabricated by the Puget Sound Machinery Depot, as previously announced. Bids are in for a Tacoma pipe line, involving 100 tons. Same city on May 14 will open bids for furnishing 14,500 feet of steel pipe, alternate bids for smooth bore or riveted.

Fabricating shops have taken on a number of new jobs involving less than 100 tons. Wallace Bridge & Structural Steel Co. was awarded 100 tons for the Bon Marche building and a small job for the Roosevelt high school addition. Poole & McGonigle, Portland, Oreg., are reported to have the contract for fabricating 530 tons for the Springfield, Oreg., bridge, general contract to Lindstrom & Feigenson, previously reported.

Finished Materials

Great Northern railroad has placed an order with the Pacific Coast Steel Co. for 2000 kegs of railroad spikes, this being the first large order placed locally by a transcontinental line. The order will be executed by the Pacific Coast Forge Co.

Seattle is in the market for furnishing 66,000 feet of galvanized steel pipe, bids May 8, and 4300 feet of 1-inch steel street railway cable, bids May 15.

Additional Funds Needed for Belgian Clock

An appeal to American engineers for thousands of additional gifts to meet the cost of the memorial carillon and clock in the tower of the new Louvain library in Louvain, Belgium, has been issued by Dr. Edward Dean Adams, 920 Fifth avenue, New York, chairman of the engineering foundation committee which is raising the fund. The committee seeks $83,000 of which $62,112 already has been contributed by 2659 donors. About 75,000 engineers, Dr. Adams says, are eligible to give, but thus far, the contributors represent only 3½ per cent of this number, although there have been substantial donations of gifts of materials and services.

Contracts for the clock and carillon, which will constitute an international memorial to Belgian engineers who contributed their lives for the defense of liberty, involve about $71,200. In addition, there will be a perpetual maintenance fund of $10,000. Tablets, memorial columns and other minor items will mean an outlay of $1800. Dedication ceremonies will be held July 4.

Industrial Advertisers To Meet in June

The National Industrial Advertising association has announced that it will hold its annual convention at Hotel Chase, St. Louis, June 11-13. The central theme of the meeting will be "Can Industrial Advertising Lower the Cost of Industrial Sales—and How?" Leading industrial advertisers of the country are expected to attend the three-day sessions. H. von P. Thomas, Bussmann Mfg. Co., St. Louis, is secretary-treasurer of the association, and H. T. Bussmann, of the same company, is general chairman of the convention committee.

Supply Associations Plan Meetings in Nashville

Sales and distribution problems in connection with machinery, mill supplies and metal products will hold the attention of the National Supply and Machinery Distributors' association which is to hold its twenty-third annual convention at Hotel Hermitage, Nashville, Tenn., May 15-17. The Southern Supply and Machinery Dealers' association and American Supply and Machinery Manufacturers' association will hold meetings at the same hotel simultaneously and on Wednesday and Thursday mornings the sessions will be conducted jointly.

Among addresses which have been scheduled by the National association are the following: "What Distributors Can Do To Convince Customers of the Advisability of Buying Locally," by Charles E. Curtis, president, Western Iron Stores Co., Milwaukee; "The Value of a One-Price Policy," by W. A. Slack, Torchweld Co., Chicago; and "The Economic Importance of the Distributor to Manufacturers and Industrial Consumers," by L. V. Benjamin, vice president, Rowell Mfg. Co., Appleton, Wis.

Foundry Operated Safely

Built in 1889, the gray iron foundry of the Erie City Iron Works, Erie Pa., has been operated 39 years, without one man being killed or maimed for life. For over two years the foundry has been operated without a single lost-time accident. It never has had an accident requiring the attention of a physician. Four slight accidents have occurred in two years, requiring first aid treatment by the plant nurse. The foundry employs 55 men. Much of the success of the safety work is ascribed to the interest taken by the foundry superintendent, Jack E. Maher, and those associated with him.

Warehouse Sales Steady

(*Concluded from Page* 1237)

Sales from Cleveland iron and steel warehouse stocks in April showed a slight improvement over March. Most jobbers were gratified with this, as March generally was the biggest month in recent years. May is expected to continue the good movement.

Building is lacking in large projects, most of the orders being for piecemeal additions and alterations. Prices on concrete bars, nominally 2.20c, which have been soft for some time, appear to be slipping even further and the market is quite uncertain.

The price on galvanized sheets has been cut $2 a ton to 4.50c. The carload and mill situation continues very unsettled on this grade, jobbers report. As yet, the reduction has had no appreciable effect on sales.

Steel jobbing in the Chicago district is at a fairly even keel, with prices steady except on wire nails. Demand for sheets from stock is less active but blue annealed demand is sustained fairly well.

Warehousemen in St. Louis area report growing spottiness in demand, but with the average holding up with seasonal normal. The most active products are building materials. Unevenness is complained of in the general manufacturing trade.

Pig Iron Market Steady

(*Concluded from Page* 1225)

ments are about equal to the April rate.

Philadelphia, May 8.—Sales of 5000 to 10,000 tons of pipe iron featured the market here in the past week, but other business was quiet. Specifications on contract are good indicating consumption is well maintained. It develops that 5000 tons of basic was sold recently and not reported at the time. Further basic tonnage is under negotiation. Eastern makers sold 2000 tons of low phosphorus iron in the past week, including 360 tons bought by the Washington navy yard from Delaware river sources.

Cleveland, May 8.—New demand for pig iron is limited mainly to small or moderate size lots for early shipment, with the aggregate for the past week approximately 23,000 tons, for furnace interests represented here. Inquiries are not as large as in recent weeks. Makers view the market as in between two buying movements, and do not expect much more than routine requirements to develop before the end of this quarter. Shipments are holding up, and some furnace interests say indications are that their May tonnage will exceed April's, continuing the progressive advance started with January. Prices are steady, lake furnaces usually quoting $16.75 to $17, base. The price for delivery in Cleveland continues $18, base, furnace.

Cincinnati, May 8.—Pig iron sales are small. Among the week's transactions 375 tons of southern iron is listed. Rumors that southern furnaces have shaded their price of $16, base, Birmingham, are denied by representatives here. Northern iron at $16.50, furnace, costs $19.50 in Cincinnati, while southern iron at $16 is laid down here at $19.69. The Ford Motor Co. is in the market for 400 tons of 14 to 16 per cent silicon iron, delivery in May and June.

St. Louis, May 8.—While specifications on pig iron contracts continue satisfactory and shipments are large, new purchasing is lagging as contrasted with recent weeks. Sales in the past several days totaled under 5000 tons, chiefly small tonnages. A number of stove plants are closed or on reduced schedules, while preparing new patterns.

Sales reported included 300 tons to a Davenport, Iowa, specialty maker, 500 tons to stove plants in the Belleville area, 100 tons of high silicon to a Springfield melter and 500 tons to an Iowa user. The leading local producer booked all but about 600 tons of the tonnage. Prices are steady.

The Sloss-Sheffield Steel & Iron Co. last week had enroute on the Tennessee river one of the largest tows of pig iron ever moved by that corporation, something over 5000 tons, for delivery to points in the St. Louis and Chicago territories.

Birmingham, Ala., May 8.—Steady shipments of pig iron on contracts is the feature of the market here. Small orders are being booked for delivery in this quarter, but little business has been booked for third quarter. The current price is $16, base, Birmingham. The melt is improving.

Heavy Hardware Trade To Meet at Boston

A record attendance of warehouse distributors, mill representatives and manufacturers of steel and heavy hardware supplies is expected and many subjects of vital interest to those in the industry will be given consideration at the nineteenth annual convention of the American Steel and Heavy Hardware association, to be held at the Copley-Plaza hotel, Boston, May 22-24.

The business program for the convention will comprise many important discussions and reports, among them being the report of the "Cost of doing business" committee by A. L. Philbrick, Congdon & Carpenter Co., Providence, R. I.; report of the iron and steel committee by A. J. Bragg, Egleston Bros. Co., Long Island City, N. Y.; report of cold-rolled steel committee by A. J. Lockwood, president, Edgar T. Ward's Sons Co.; and report of the committee with relation to the structural industry by T. J. Foster, president, National Bridge Works, Long Island City, N. Y. An interesting entertainment program has been arranged, one of the features of which is a formal dinner-dance on the evening of May 22.

Board Meets May 17

New York, May 8.—The twelfth annual board meeting and dinner of the National Industrial Conference board will be held here May 17. Magnus W. Alexander, president, will speak on "Mechanization of Industry and our Social and Economic Progress. Virgil L. Jordan, chief economist of the board, will talk on "American Industry's Interest in International Economic Relationships." Loyall A. Osborne, a chairman of the board, will preside at the private dinner.

Will Meet at Chicago

New York, May 8.—A general meeting of the Screw Machine Products association will be held May 17 at the Great Northern hotel, Chicago. Dr. Arthur E. Swanson, consulting economic engineer, will speak on "Some Dangers In the Present Business Situation."

Steel Must Be Steel

Washington, May 8.—Use of the word "steel" as a brand or label for tools made entirely or partly of metals other than steel is prohibited in a stipulation agreement entered into between the federal trade commission and a seller and distributor of hardware, it has been announced. The company, whose name is not made public, agreed to discontinue such use of the word "steel" in its advertising.

Union Hourly Rates 2.6 Times Those of 1913

Washington, May 8.—Average rate of wages for workers in the building trades increased from $1.278 to $1.323 per hour from May, 1926 to May, 1927. Bricklayers went from an average of $1.565 to $1.603, carpenters from $1.267 to $1.311, painters from $1.305 to $1.349, plasterers from $1.595 to $1.628 and plumbers from $1.381 to $1.409. These figures are from Bulletin 457, just published by the bureau of labor statistics. The building trades are almost entirely on a 44-hour week with an average of 43.7 hours due to many trades working only a 5-day or 40-hour week.

Union trades as a whole in May, 1927, had an hourly wage rate 2.6 times that of 1913 and 2.9 times the rate of 1907. Between 1913 and 1927 the full-time hours per week were reduced 7.6 per cent.

May Co-ordinate Meetings

At the request of the International Electrotechnical commission, representatives of the International Illumination commission, World Power conference, International Consultative Committee on Long Distance Telephony, International Union of Producers and Distributors of Electrical Energy, and International Standards association convened in London in January to consider the co-ordination of international technical meetings. Decision was reached to call another meeting in a year by which time the various organizations would have had time to give official decision regarding the permanent establishment of committee to co-ordinate meeting plans.

Production Indexes Rise

Washington, May 8.—Production index for March for iron and steel was 152, compared with 133 for February and 150 last March, taking 1919 as 100, according to the department of commerce.

March production for "other metals" was 163, compared with 144 for February and 170 for March, 1927. Unfilled orders for March for iron and steel were 90, compared with 90 for February and 76 for last March, taking 1923-1925 as 100.

Foremen Will Meet

The National Association of Foremen will hold its fifth annual convention in Canton, O., May 25-26, it has just been announced. Included in the program are the following addresses: "The Requisites of Foremen of Tomorrow," by F. A. Seiberling, president, Seiberling Rubber Co., Akron, O.; "Conservation of Manpower through Motion Analysis," by A. B. Segur; "Industrial Waste," by W. Chattin Wetherill, University of Pennsylvania, Philadelphia; "Foremen Conferences," by J. C. Wright, director, federal board for vocational education, Washington; and "The Foreman as an Executive," by Robert H. Spahr, Chamber of Commerce of the United States.

H. W. Hoover president, Hoover Co., Canton, O., Canada and England, will present an address at the banquet on Friday evening. Plant inspection trips have been arranged to the Central Alloy Steel Corp., Hoover Co., Pennsylvania Railroad shops, and Timken Roller Bearing Co.

Electric Output Gains

Average daily production of electricity in March was 233,000,000 kilowatt hours per day, about 2 per cent less than the average daily output in February. The decrease indicates the beginning of the usual seasonal decline due to increase in the hours of daylight and moderation in temperature as summer approaches. The output by the use of water power in March was 39.2 per cent of the total; the corresponding figure for February was 37.6 per cent.

Total output of electricity by public utility power plants for first quarter was 21,367,000,000 kilowatt hours, an increase of 7.7 per cent over the output of 19,836,000,000 kilowatt hours for first quarter of 1927. The output for first quarter of 1927 was 10 per cent larger than the output for the first quarter of 1926.

Revise Tank Standard

Washington, May 8.—The simplified practice recommendation on range boilers and expansion tanks has been reaffirmed with slight modifications to include range boilers with four tappings, to be placed in line at the side at 6, 18 and 26 inches from the bottom and 6 inches from the top.

William W. Lewis, since 1920 sheet mill superintendent of Falcon Steel Co., Niles, O., has been appointed general superintendent of the Apollo Steel Co., Apollo, Pa.

Chapman-Stein Interests Unify Control

Chapman Engineering Co. and Chapman-Stein Furnace Co., both of Mt. Vernon, O., have merged operations and personnel under the name of the Chapman-Stein Co., combustion engineers. Chapman-Stein Furnace Co. was organized in 1920 by the Chapman Engineering Co. In the interval it has grown rapidly in engineering and construction of furnaces for the steel and glass trades.

Until recently Charles M. Stein & Co., Paris, France, owned 50 per cent of the furnace company's stock. A few months ago the Chapman Engineering Co. bought the French company's interest and now owns the entire capital stock. Merger of operations has been deemed logical under unified ownership.

Personnel has remained practically unchanged. The executive officers are as follows: President, B. B. Williams; vice president and general manager, George R. McDermott; treasurer, N. L. Daney; secretary, Z. E. Taylor. All these officers reside in Mt. Vernon. With William B. Chapman, of New York, they constitute the board of directors.

The enlarged company will continue its combustion engineering service, especially in gas producers, industrial furnaces and equipment, waste heat boilers for metallurgical furnaces and complete producer plants. The company owns important patents relating to metallurgical furnaces, gas producers and allied equipment. European rights to these patents are being handled by Charles M. Stein & Co., Paris, and in the British Empire by the Stein-Atkinson Co. Ltd., London.

New Hanna Stack Will Be Ready in Fall

Buffalo, May 8.—The new blast furnace stack being built by the M. A. Hanna Co., Cleveland, to replace the No. 4 stack of the Rogers-Brown group will be producing iron by early October, the Hanna company expects. Work of dismantling the old stack is now well along.

The height of the new stack will be 85 feet 4½ inches; diameter of the hearth 20 feet, and depth 10 feet; diameter of the bosh 24 feet 3 inches, and depth 12 feet, with 6 feet of straight work above the bosh. The stockline will be 17 feet and the bell 12 feet, the bosh angle being 80 degrees. The rated pig iron producing capacity of the stack has been set at 600 tons daily. Present blowing engines and stoves will be retained.

No. 4 stack, built in 1910-12 by the Rogers Brown Iron Co., is the newest of the four which stand along the Rogers Brown slip on the lakefront. Counting the three stacks of the Buffalo-Union group, the Hanna company has seven stacks at Buffalo. It owns one-half interest in the Donner-Hanna Coke Corp., with 150 Koppers by-product coke ovens at Buffalo with an annual capacity of 700,000 net tons of coke and a benzol plant with an annual capacity of 3,300,000 gallons of light oils.

E. I. du Pont de Nemours Co. has moved its Pittsburgh offices from the Fulton building to 1909 Clark building.

Deeper Channels Urged

Washington, May 8.—Congress has before it the recommendation of Maj. Gen. Edgar Jadwin, chief of army engineers, that Great Lakes channels be deepened to 23 feet. It is estimated that the cost of deepening to 23 feet would be $24,000,000, with annual maintenance $165,000. Gen. Jadwin predicts that deeper channels would save $300,000 a year in transportation charges on coal alone and that the greater depth is necessary in view of the probable stimulation to navigation by the St. Lawrence waterway.

Award of Bessemer Medal to Schwab Brings Nations Closer

PRESENTATION of the Bessemer gold medal to Charles M. Schwab by the British Iron and Steel institute, May 3, marked another tie between British and American branches of the steel industry. This medal is awarded annually by the institute from funds left in trust for that purpose by Sir Henry Bessemer, inventor of the process of steelmaking which bears his name. Mr. Schwab is honorary vice president of the institute, having been elected following his elevation to the presidency of the American Iron and Steel institute to succeed Judge Gary.

In accepting the Bessemer medal Mr. Schwab spoke in part as follows:

I have devoted my life to the steel business. I have given to it all that I had, and the greatest satisfaction I have had in life has been to see it grow and develop. The name Bessemer is the outstanding name in the history of the steel industry. Up to the development of the open-hearth process the bessemer converter was the very basis of the steel industry. We have named cities and railroads in America after Sir Henry Bessemer. You can understand, therefore, something of the romance which attaches in my imagination to the name of this great man. He is certainly the patron saint of the iron and steel religion.

By a coincidence which I like to think of I started my own career as a workman in the steel mills of Pittsburgh in 1879, the same year, curiously enough, in which the Royal Society admitted Sir Henry Bessemer as a fellow, and the government of Great Britain honored him with a knighthood. During the nearly fifty years which have elapsed since then we have seen this industry grow to such an extent that the industrial period in which we live has now come to be called "The Age of Steel." In that year—1879—the United States, for instance, produced a total of about 1,000,000 tons of steel. Now the steel mills of my country turn out approximately 50,000,000 tons of steel per annum. Truly a gigantic development.

May I mention another coincidence in connection with the Bessemer medal. The first American to receive this distinction was the famous Peter Cooper, one of the pioneers of American industry. And, oddly, enough, you awarded the Bessemer medal to Peter Cooper in the year 1879, the same year in which Sir Henry Bessemer received his knighthood and the same year in which I had the privilege of beginning work as a humble laborer. You have conferred this distinction upon four other great Americans: Abram S. Hewett, John Fritz, Henry Marion Howe and Andrew Carnegie. I am proud beyond words to be the next to follow Mr. Carnegie among the Americans to be added to the distinguished British, French and other names which you have honored in this unique manner.

We of the steel business in America appreciate this association with you. We like to feel that we are working alongside the steel industry of Great Britain, not merely in the making of steel but in promoting the progress and happiness of humanity.

We would like to see this understanding increase and broaden. We in America, and I am in a position to say we of the iron and steel business in particular, respect and admire you of Great Britain. We like to think that you respect and admire us. There can be no doubt whatever that upon the basis of such continued respect and admiration among all the English-speaking peoples, there is maintained one of the strongest possible foundations for the peace and progress of the world.

Purchasers Seek Co-ordination in Buying and Selling Policies

THAT the purchasing agent who uses his advantage in this buyers' market for the purpose of beating down sellers' prices is the exception rather than the rule is the concensus of opinion of the score of manufacturers, sales managers, purchasing agents and representatives of the business press who attended a conference on buying and selling policies held Wednesday, May 2 at Hotel Commodore, New York. It was generally conceded that the force of present competition and its effect on the morale of the seller is a more potent factor in the price situation than the few purchasing agents who pursue objectionable tactics.

The conference was sponsored by the National Association of Purchasing Agents and was called to discuss conflicting policies of buying and selling and to determine whether purchasing agents can help the present situation. The motive behind the conference undoubtedly lay in the emphasis now being placed on "beating down the price," and similar phrases which seem to imply that purchasers are taking an undue advantage of the weapons afforded them in the present highly competitive business situation.

Congratulate President Jones

G. A. Renard, secretary-treasurer, National Association of Purchasing Agents, presided in the absence of Lewis A. Jones, vice president, New York Power & Light Co., Albany, and president of the association. Mr. Jones suffered an attack of illness while enroute to New York to attend the meeting. At the suggestion of Roger Babson, those attending the conference sent a message to Mr. Jones expressing their wishes for his speedy recovery and tendering congratulations on the success of the conference, in which he was deeply interested.

Following introductory remarks by Mr. Renard, the discussion centered on the fundamentals of the relationship between buyer and seller. One speaker declared that the buyer is not concerned with the profit made by the seller. He held that if the purchaser claims he is not concerned when the vendor is losing money, then he has no right to complain if at some other time he appears to be making an excessive profit.

Other speakers contended that the buyer should be actively concerned over the welfare of the seller. They maintained that the purchaser must protect his sources of supply and that any buying policy detrimental to the interests of the seller eventually reacts against his customers. This point was declared to be particularly applicable in the automobile industry, where the welfare of those who supply material, parts and service to the builders of motor cars is essential to the sustained purchase of cars by the masses.

Good Will Best Basis for Business Deal

HUNDREDS of millions of dollars worth of goods and services are bought and sold annually on the basis of the relationship of good will and mutual confidence existing between the contracting parties. Transactions of this kind form the backbone of our markets, and if all sales could be placed on this basis, much of the grief attending present conditions would be avoided.

This was the keynote of the brief remarks by one speaker at the conference. He urged purchasing agents and salesmen to develop reputations for fair dealing. He cited instances during the war where companies known as "fair" buyers were able to obtain all the material they required at fair prices without resorting to the use of priority certificates, whereas some concerns known for "sharp" purchasing tactics were almost entirely dependent on priority certificates.

Cite Losses in Multiple Tenders

Several speakers alluded to the losses incurred in multiple tenders on engineering projects. It was said that the waste caused by duplicate estimates, drawings and bids aggregates more than a billion dollars annually. The restriction of bids on large projects to a few reputable concerns was advocated, but doubt was expressed by others as to whether such restriction is possible or feasible.

Adoption of firm bidding—the practice of refusing to change a bid once it is submitted—was suggested as a remedy for price cutting. While it was conceded that this would assist materially in stabilizing prices in the markets for certain commodities, it was shown that it would be ineffective in many lines of business.

Price Not Only Factor

Considerable emphasis was placed on the fact that in too many instances price is made the sole basis of a transaction. One purchasing agent outlined four factors which he considers in buying. These are quality of goods to be purchased, adaptability of goods to requirements of purchaser, reputation and ability of vendor to render proper service in connection with the sale, and finally price. At this stage the head of one of the largest distributing companies in America spoke authoritatively on the extent to which service may supplant price as the leading factor in sales. He pointed out that if purchasers could realize the savings that are now accorded buyers throughout the country because of improved railroad service and because of the ability of certain distributors to stock the materials which in past years had to be kept on inventory by the purchaser, the question of price would be subordinated to that of service.

Another interesting sidelight on the problem was presented by the president of a trade association who described a plan of stabilization which changed one business from an annual loss of $12,000,000 in 1924 to a profit of approximately $6,000,000 in each of the past three years. This plan is comparatively simple, and is based on the theory that manufacturers should work with and support jobbers rather than compete with and oppose them.

Numerous cases were cited in which purchasing agents manipulated bids or in other ways took advantage of salesmen, but it was admitted that these are not typical cases and that for every improper act laid at the door of the purchasing agent, several equally offensive practices on the part of salesmen could be cited. In other words it was agreed that the purchasing profession as a whole consists of individuals of honesty and integrity and that much of the com-

plaint now heard is due to the action of a relative few whose tactics are objectionable and are condemned by reputable purchasing agents.

Much was said about the salesman's responsibility for prices. It seemed to be the general opinion that too many salesmen cut prices at the first sign of resistance and that getting the order too often is considered more important than making a profit on the transaction. Reports by salesmen of unfair treatment at the hands of purchasing agents frequently turn out to be alibis, according to one speaker.

At the conclusion of the discussion it was decided that a committee to be appointed by President Jones will summarize the thought of the conference and if feasible shape it for further use in various industrial groups.

Among those who attended the conference were the following:

Roger W. Babson, Babson's Statistical organization, Wellesley Hills, Mass.; L. F. Boffey, editor, *The Purchasing Agent*, New York; George E. Cullinan, vice president, Graybar Electric Co., New York; E. F. DuBrul, general manager, National Machine Tool Builders' association, Cincinnati; J. V. N. Dorr, Dorr Co., New York; Roland P. Falkner, National industrial conference board, New York; Charles J. Graham, president, Bolt, Nut and Rivet Manufacturers' association, Pittsburgh; Thomas W. Harris, Jr., purchasing agent, E. I. du Pont de Nemours & Co., Wilmington, Del.; W. N. Kirkman, director, Maryland State purchasing bureau, Baltimore; W. A. Marshall, president, W. A. Marshall & Co., New York; E. J. Mehren, vice president, McGraw-Hill Co., New York; W. W. Nichols, president, Machinery Builders' society, New York; T. H. Ormsbee, Associated Business Papers Inc., New York.

Frank Parrish, supervisor of inventories, United States Steel Corp., New York; G. A. Renard secretary-treasurer, National Association of Purchasing Agents, New York; R. M. Roosevelt, vice president, Eagle-Picher Lead Co. and president, American Zinc institute, New York; A. L. Salt, president Graybar Electric Co., New York; E. L. Shaner, editor, IRON TRADE REVIEW, Cleveland; J. T. Smith, vice president, General Motors Corp., New York; Earl Whitehorne, editor, *Electrical World*, New York; N. A. Wolcott, president, Packard Electric Co., Warren, O.; and Douglass G. Woolf, editor, *Textile World*, New York.

Mention of cementation steel was made in 1540 by an Italian metallurgist, V. Biringuccie.

Buffalo May Return to Steel for Schools

Advertising of bids to be received May 17 for elementary school No. 81 to be erected on Lafayette field, Delaware and Tacoma avenues, Buffalo, is notable because of the provision that bids will be accepted for either concrete or steel buildings. Before the war the school buildings of Buffalo were built of steel, such as the Hutchinson high school. During the war and immediately afterward, high prices and scarcity of steel caused the school department to change to concrete construction. Because of the claims which Buffalo citizens made that steel buildings were less expensive to build than concrete, the board of education is accepting bids on either concrete or steel or both. The board is attempting to determine whether steel or concrete is cheaper and on the bids filed May 17 may hinge the type of future construction.

Engineering Bodies May Join Hands

At an organization meeting in June an effort will be made to bring together the various engineering organizations of Worcester, Mass., and central Massachusetts. Following is the nominating committee which is to submit a recommendation for officers: Wilbur C. Searls, Worcester branch, American Society for Steel Treating; F. B. Crosby, Worcester branch, American Institute of Electrical Engineers; A. D. Putnam, Worcester branch, American Society of Mechanical Engineers; R. C. Charron, Worcester Chemists club; Maj. J. W. Howe, Worcester Society of Civil Engineers; and Edward H. Bauer, engineers at large.

Ship Fewer Locomotives

Washington, May 8.—Shipments of railroad locomotives in April dropped sharply from March, department of commerce statistics show. Following are monthly comparisons:

Year and Month	Shipments Total	Shipments Domestic Steam	Shipments Domestic Electric	Unfilled orders Total	Unfilled orders Domestic Steam	Unfilled orders Domestic Electric
1927						
April	98	72	23	334	255	42
Total (4 mos.)	372	241	52	.....	.....	.....
May	109	77	15	434	380	34
June	89	63	18	400	333	31
July	60	35	18	399	299	57
Aug.	81	71	6	363	244	68
Sept.	127	86	7	271	167	49
Oct.	112	81	12	182	97	45
Nov.	52	31	7	145	74	42
Dec.	72	41	13	232	178	39
Total 1927	1,074	726	148	.....	.....	....
1928						
Jan.	47	22	23	222	161	38
Feb.	59	43	11	204	146	40
March	70	44	15	178	123	37
April	46	38	6	188	129	41
Total (4 mos.)	222	147	55	.....	.....	.....

Use New Lath Standard

Washington, May 8.—A sufficient number of manufacturers, distributors, and organized users of metal lath have accepted the revised simplified practice recommendation to enable the project to be in effect as of last Jan. 1. The recommendation was originally effective Jan. 1, 1924.

Convention Calendar

May 14-17—American Society of Mechanical Engineers. Spring meeting at William Penn hotel, Pittsburgh. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

May 14-18—American Foundrymen's association. Annual convention and exposition at Commercial Museum, Philadelphia. 222 West Adams street, Chicago, is secretary.

May 15-17—National Supply and Machinery Distributors association. Annual meeting at Hermitage hotel, Nashville, Tenn. George A. Fernley, 505 Arch street, Philadelphia, is secretary.

May 15-17—American Supply and Machinery Manufacturers association. Annual meeting at Hermitage hotel, Nashville, Tenn. F. D. Mitchell, 1819 Broadway, New York, is secretary.

May 15-17—Southern Supply and Machinery Dealers association. Annual meeting at Hermitage hotel, Nashville, Tenn. Alvin M. Smith, Smith-Courtney Co., Richmond, Va., is secretary.

May 18—Gray Iron institute. Open meeting at Commercial Museum, Philadelphia. D. M. Avey, 1213 West Third street, Cleveland, is temporary secretary.

May 22-24—American Steel and Heavy Hardware association. Nineteenth annual convention at Copley-Plaza hotel, Boston. B. R. Sackett, 503 Arch street, Philadelphia, is secretary.

May 23-25—Associated Machine Tool Dealers. Annual spring meeting at Granville. O. E. P. Essley, 551 W. Washington boulevard, Chicago, is secertary.

May 25—American Iron and Steel institute. Spring meeting at Hotel Commodore, New York. E. A. S. Clarke, 75 West street, New York, is secretary.

May 28-31—National Association of Purchasing Agents. Thirteenth annual convention and exhibition at American Royal building, Kansas City, Mo. George A. Renard, 9 Park Place, New York, is secretary.

June 11-13—National Industrial Advertising association. Annual convention at Hotel Chase, St. Louis. H. von P. Thomas, Bussman Mfg. Co., University at Jefferson, St. Louis, is secretary.

June 25-29—Association of Iron and Steel Electrical Engineers. Annual convention and exposition at Hotel Stevens, Chicago. John F. Kelly, 705 Empire building, Pittsburgh, is secretary.

June 25-29—American Society for Testing Materials. Annual meeting at Chalfonte-Haddon Hall, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Industrial Men in the Day's News

Eugene P. Thomas, Elected United States Steel Corp. Vice President

STARTING as stenographer for a company in the South, he has advanced to an important executive position in the world's greatest producer of iron and steel.

KNOWLEDGE of foreign markets gained through acquaintanceship with manufacturers in European countries prepared him for the position to which he has been elected.

HIS WARTIME activities brought him honors, two countries—France and Italy—bestowing their government's decorations on him.

MAKING the most of his opportunities to study intensively the problems of the industry of which he has been a part for 36 years has brought its reward to Eugene Peeples Thomas, president of the United States Steel Products Co., New York. On April 17 Mr. Thomas was elected a vice president of the United States Steel Corp., to have charge of the marketing of steel products. He will assume his new duties June 1.

Mr. Thomas was born at Atlanta, Ga., in 1876, where after his graduation from Atlanta high school he started to work with the Johnson Co., now the Lorain Steel Co. This was in 1892, and Mr. Thomas was employed first as a stenographer. Later he was made a salesman. After eight years in Atlanta Mr. Thomas, in company with Carroll Burton, present head of the Lorain company, was sent to London to establish and operate the offices of the company in that city.

Four years were spent in London as co-manager of the branch office. Then Mr. Thomas returned to the United States to become a departmental manager in New York for the United States Steel Products Co., a newly formed unit of the Steel corporation. This position he held for three years, and in 1906 he was appointed an assistant to James A. Farrell, then president of the company. Upon the election in 1916 of Mr. Farrell to the presidency of the Steel corporation, Mr. Thomas became head of the Steel Products company.

Having made several trips to Europe and South America, Mr. Thomas has become widely acquainted abroad with steel manufacturers and others interested in the industry and he is better able to understand the problems of foreign markets. He took a prominent part in the negotiations, extending over several years, which finally resulted in reduced export freight rates on steel products. The negotiations included numerous hearings before the interstate commerce commission.

Mr. Thomas is one of the founders of the National Foreign Trade council and has attended every convention since its formation. Upon several occasions he presented a paper before this group.

He is also a founder of India House, New York, of which he is a governor, and he is a member of the chamber of commerce of New York state. Other interests of Mr. Thomas include the international chamber of commerce, Inter-American High commission, the American Iron and Steel institute, Japan society and the Pilgrims. Mr. Thomas is a director of the American Manufacturers Export association, the Pan American society of the United States and the Canadian Steel & Wire Co. Ltd.

Clubs with which he is connected include Metropolitan, Lotos and Railroad, of New York; Baltusrol and Plainfield Country, and Union-Interallies, of Paris.

During the war Mr. Thomas was decorated as chevalier of the Legion d'Honneur, of France, and Cavaliere Ufficiale of the Order of the Crown, of Italy.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

HOWARD W. DUNBAR, formerly assistant sales manager, has been appointed works manager of the machine division of the Norton Co., Worcester, Mass., succeeding John C. Spence, who resigned that position and office of director recently. George N. Jeppson, who has been secretary and works manager since 1919, has been made vice president and will continue to be in charge of production of all divisions, retaining his position as secretary of the board. Mr. Dunbar will have direct charge of all production and engineering in the machine division. He joined the Norton Co. in 1913 as assistant chief engineer of the machine division and served in that capacity for six years. In July, 1919, he was appointed sales manager of the machine division and in January, 1923, was made assistant general sales manager.

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R. M. Gibbs has been appointed advertising manager of the Pittsburgh-Des Moines Steel Co., Pittsburgh.

* * *

James W. Hook, president of the Geometric Tool Co., New Haven, Conn., has been elected chairman of the Acme Wire Co.

* * *

Jack Davis has been made foundry superintendent of the M. Hoagland's Sons Co., Rockaway, N. J. Mr. Davis formerly was foundry foreman of R. Hoe & Co., Dunellen, N. J.

* * *

C. W. Stone, manager of the General Electric Co.'s central station department, Schenectady, N. Y., has been appointed consulting engineer. M. O. Troy has been named to succeed Mr. Stone.

* * *

Charles M. Kepner, for the past eleven years foundry superintendent of the Kokomo Brass Works, Kokomo, Ind., has been made foundry superintendent of the Bunting Brass & Bronze Co., Toledo, O.

* * *

Theodore Beran, who on May 1 retired as commercial vice president of the General Electric Co., Schenectady, N. Y., as noted in last week's issue, was a guest of honor at a testimonial dinner at the Hotel Plaza, New York, that night. The toastmaster was J. R. Lovejoy, vice president. Gerard Swope, president, spoke in behalf of the company.

* * *

Alfred E. Munch Jr. has been named Chicago-Milwaukee representative of the Rollway Bearing Co. Inc., Syracuse, N. Y., with headquarters in the Railway Exchange building, Chicago.

ROBERT M. KEENEY

Newly elected president of the Pittsburgh Crucible Steel Co., Pittsburgh, as announced in last week's issue

* * *

Parmly Hanford, formerly assistant general manager of the Indian Motocycle Co., Springfield, Mass., has been elected vice president in charge of production by the Handy Chair & Table Co., Springfield, Mass.

* * *

Theodore P. Brown, Worcester, Mass., treasurer of the Langford Sales Audit Machine Co., also has been appointed works manager. This company, with a manufacturing unit at Boston, plans to move to Worcester about June 1.

* * *

Henry D. Sharpe, Brown & Sharpe Mfg. Co., Providence, R. I., has been elected vice president of the American Association of Community Chests and Councils. Mr. Sharpe is president of the Providence community fund.

* * *

E. A. Ernst has been appointed assistant district sales manager of the Inland Steel Co.'s St. Louis office to succeed W. F. Brumm. Mr. Ernst's business career started in 1914 with the Trumbull Steel Co., Youngstown, O. He has been associated with the sales departments of several companies since that time. Most recently he was in the Chicago office of the American Rolling Mill Co.

* * *

William J. Serrill, assistant general manager of the United Gas Improvement Co., Philadelphia, has been elected chairman of the American Engineering Standards committee, succeeding C. E. Skinner, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., who has been chairman for the past three years.

Cloyd Chapman, engineering specialist, New York, has been elected vice chairman.

* * *

John E. Woods, whose resignation as assistant general manager of sales for Carnegie Steel Co., Pittsburgh, was announced in last week's issue, started in the steel industry with the Carnegie company as a time clerk at the Homestead works in 1897. He went into the sales department and eventually became manager of sales at Cincinnati, where he remained until his promotion as assistant general manager of sales at Pittsburgh. He is a graduate of Washington and Jefferson college.

Joseph C. Shields who succeeds Mr. Woods, as noted last week, also began his business career with the Carnegie company as an office boy in 1897. He went through various departments gradually working into the sales department, and in 1917 he was made assistant to Mr. Woods.

James E. Lose, named to succeed Ralph H. Watson as assistant general superintendent of the Homestead plant as noted last week, began with the Carnegie company in 1910 as a tracer in the drawing room at the Carrie furnaces. He advanced through various positions to superin-

tendent of the furnaces from which place he moved to his present office.

* * *

Thomas G. New has been elected president of the Acme Wire Co., New Haven, Conn., succeeding Victor M. Tyler, who has resigned.

* * *

Robert J. Anderson, director of research of the Fairmont Mfg. Co., Fairmont, W. Va., has been elected a vice president of the company.

* * *

Paul Mackall, general manager of sales of the Bethlehem Steel Co., has returned to Bethlehem following a trip to Japan and the Hawaiian Islands.

* * *

Benjamin F. Faulkner has been appointed publicity director of Newport Rolling Mill Co., Newport, Ky., succeeding E. L. Becker, who has resigned.

* * *

W. B. Ohl, formerly auditor of the Trumbull Steel Co., Warren, O., has been named comptroller for Republic Iron & Steel Co., Youngstown, O., an office newly-established.

Harry D. Rhodehouse, for many years traffic manager for the Youngstown, O., chamber of commerce, has been named traffic manager of the Republic company. E. F. Kidd has been made assistant to Mr. Rhodehouse.

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L. M. Bassini, general manager of the Burnside Steel Foundry Co., Chicago, has resigned. W. E. Adams has been appointed superintendent of the Burnside company.

* * *

Charles D. Steinmeier has been appointed sales representative of the American Foundry Equipment Co. Inc., Mishawaka, Ind., with headquarters at Philadelphia.

* * *

Carl O. Thieme has become associated with H. Kramer & Co., Chicago, as metallurgist. For the past ten years Mr. Kramer has been connected with the Michigan Smelting & Refining Co., Detroit, in various technical capacities.

* * *

Arthur E. Hodgkins, who has been with Witherbee, Sherman & Co., Port Henry, N. Y., as assistant secretary and treasurer in charge of iron ore sales for several years, recently severed his association with that company.

* * *

Ralph Simpson has been appointed sales and service representative of the Geometric Tool Co., New Haven, Conn., for eastern New England territory. Mr. Simpson was at one time sales manager of Stockbridge Machine Co. and also was connected with the Potter & Johnson Machine Co.

* * *

William H. McIntyre has been made sales manager for the Dempsey Foundry Co., Sharon, Pa. Mr. McIntyre started his foundry work with the American Steel Castings Co., spent 13 years in charge of sales for the Sharon Foundry Co., Sharon, and later was chosen president of the Salisbury Iron Corp., Lime Rock, Conn.

* * *

Kenneth J. Burns has been appointed district sales agent for the Youngstown Sheet & Tube Co. in charge of

PAUL J. KRUESI

Newly-elected president of the American Electrochemical society as announced in Iron Trade Review last week

the Youngstown, O., district sales office, succeeding Myron S. Curtis, who has resigned to enter another line of business. Mr. Burns formerly was in the Cleveland sales office of the Youngstown company.

* * *

Charles T. Johnston has resigned as district sales agent for the Republic Iron & Steel Co. at Pittsburgh, where he had been located for several years. Mr. Johnston had been connected with the sales department of the Republic company for many years, having been district sales agent at Cleveland and later general sales manager at Youngstown.

* * *

Andrew S. Coulter has been appointed district manager in the Chicago office of the Werner G. Smith Co., Cleveland. Mr. Coulter formerly was associated with the James H. Herron Co, Cleveland, consulting engineer. He also has been research engineer for the Westinghouse Air-brake Co., Swissvale, Pa., and metallurgist for the Crown Cork & Seal Co., Baltimore.

* * *

John F. Braam, Paul Renshaw and Frank W. Moffett were elected vice presidents and directors of the General Railway Signal Co., Rochester, N. Y. Mr. Braam, who is also secretary and assistant treasurer of the company, was identified with the Taylor Signal Co., Buffalo, prior to its merger with the General Railway Signal Co. in 1904, and has been associated with the latter company since that time. Mr. Renshaw has been assistant to the president, in charge of sales, and will continue in charge of the sales department. He was formerly with the Federal Signal Co., having come to the Rochester company following the merger of the two organizations in 1924. Mr. Moffett has been assistant to the general manager, in charge of factory operations.

Castings Output Gains

Washington, May 8.—Production of malleable castings in March continued to gain, according to the department of commerce statistics. March production was 63,322 tons. Monthly comparisons follow:

	Total tons produced	Per cent of capacity	Total tons booked	†Monthly capacity
1926				
Total	715384	54.7	607,949	1,307,889
1927				
March	66,372	62.2	53,597	106,698
Total (3 mos.)	175,244	55.3	162,630	317,003
April	59,225	55.8	56,326	106,163
May	57,655	54.1	49,482	106,473
June	58,972	55.3	46,178	106,736
July	48,202	43.9	45,782	104,287
August	51,394	48.6	42,515	105,717
September	45,210	43.3	37,912	104,401
October	46,765	46*	39,494	101,606
November	40,845	40.5	34,624	100,778
December	47,876	47.6	49,215	100,685
Total (year)	631,388	50.4	564,158	1,253,849
1928				
January	54,818	59.6	53,153	92,015
February	59,045	63.8	55,452	92,498
March	63,322	69.6	60,697	91,043
Total (3 mos.)	177,185	64.3	169,302	275,556

†Capacity during 1927 has been based on following formula: "Total number of units of molding floor space, times average production per molder per day per unit of floor space, times number of actual working days per month." Beginning January, 1928: "Average monthly production for the best six consecutive months since Jan. 1, 1919, is to be taken as a practical monthly capacity."

Electrical Orders Rise

Washington, May 8.—Orders for electrical goods in the first quarter of 1928 gained over the fourth quarter of last year, according to the department of commerce. Orders were

also ahead of the corresponding quarter of 1927. Following are comparisons:

	1st quarter	2nd quarter	3rd quarter	4th quarter	Total
1923	225,399,383	240,542,824	201,910,099	218,165,415	886,017,721
1924	228,760,838	221,167,876	185,747,314	231,470,552	867,146,580
1925	233,023,182	227,502,652	232,933,532	244,597,050	938,056,416
1926	262,677,736	248,000,075	241,114,209	260,078,082	1,011,870,102
1927	243,651,415	236,427,121	235,557,857	239,247,023	954,883,416
1928	244,916,615	.....	.....	.....	244,916,615

Names Papers for Spring Institute Meeting

Details of the program for the thirty-third general meeting of the American Iron and Steel institute to be held at the Hotel Commodore, New York, May 25, have just been announced. Three sessions are scheduled—one in the morning at 10 o'clock, one in the afternoon at 2 o'clock and the banquet at 7 o'clock. As is customary, the address of the president, Charles M. Schwab, will open the morning session. The remainder of the morning session and the afternoon session will be devoted entirely to the reading and discussion of technical papers.

Sir William Ellis, chairman, John Brown & Co. Ltd., Sheffield, England, will be the guest of honor at the meeting. He will deliver an address at the banquet. Sir William is past president of the Iron and Steel institute of Great Britain and British Institute of Civil Engineers.

Papers to be read at the meeting are:

"Basic Open-Hearth Steel Practice," by Dr. G. B. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology, and consulting engineer and metallurgist, Cambridge, Mass.

"The Effect of Coal Segregation, Mixing and Heating Upon the Quality of Metallurgical Coke," by F. F. Marquard, assistant general superintendent, Carnegie Steel Co., Clairton, Pa.

"The Manufacture of Alloy Steels," by E. C. Smith, Central Alloy Steel Corp., Massillon, O.

"The First Iron Works in America—1645," by Howard Corning, Baker library, Harvard university, Cambridge, Mass.

"Waste Heat Boilers," by R. H. Stevens, chief engineer, Cambria plant, Bethlehem Steel Corp., Johnstown, Pa.

"The Trend in Ingot Mold Design," by R. H. Watson, general superintendent, Homestead works, Carnegie Steel Co., Munhall, Pa.

"A Modern Steelworks Power and Blowing Plant," by Wilfred Sykes, assistant general manager, Inland Steel Co., Chicago.

Steel Club to Golf

The Steel club of Philadelphia will stage its annual golf tournament and dinner at the Tredyffrin country club, Paoli, Pa., June 22.

Central Ornamental Iron Works, Chicago, has changed its name to L. S. Ingeman Ornamental Iron Co.

Obituaries

WILLIAM T. EMMES, 65, vice president of the Boye-Emmes Machine Tool Co., Cincinnati, died in that city recently. He was born in Winchester, N. H., and went to Cincinnati in 1863 when he entered the employ of the R. K. LeBlond Machine Tool Co. He became associated with the R. W. Boye Co. in 1898 and following the reorganization of the company in 1912 under the Boye-Emmes company, Mr. Emmes became vice president.

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Edgar Fahs Smith, 72, provost of the University of Pennsylvania from 1911 to 1920 and a prominent chemist, died in Philadelphia.

* * *

Edward Osgood Richards, 71, New York, a pioneer in the manufacture of fire alarms and automatic sprinklers, died May 1, in that city.

* * *

Michael Blake, 59, president of the Federal Iron & Metal Co., Newark, N. J., died, April 30, in Tucson, Ariz. Mr. Blake was born in Ireland.

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George H. Daniell, sales manager of the John Pritzlaff Hardware Co., Milwaukee, and associated with the concern 54 years, died April 27 at the age of 76.

* * *

William L. Miller, 76, formerly with the Westinghouse Airbrake Co. and Westinghouse Machine Co., Pittsburgh, retiring from the latter in 1924, died April 27 at San Diego, Calif.

* * *

William U. Dennison, 64, superintendent of construction for the Carnegie Steel Co. in the Youngstown, O., district, and builder of the McDonald plant of the company at McDonald, O., died suddenly April 21, after an affiliation of 27 years with the company.

* * *

Charles D. Jones, 48, superintendent of the Hubbard Pressed Steel Co., Niles, O., died at the Warren, O., City hospital May 5 from injuries received in an automobile accident at Mineral Ridge, O. He was born at Mineral Ridge and except for several years at Pontiac, Mich., he had spent his entire life in the Mahoning valley.

* * *

Nicolay Nelson, 67, founder of the Nelson Machine Works, Waukegan, Ill., died recently. He was born in Norway and came to the United States as a young man, obtaining employment in Waukegan 35 years ago. The Nelson company was founded 22 years ago by Mr. Nelson in partnership with his son.

* * *

A. M. Campbell, president of the Glamorgan Pipe & Foundry Co., Lynchburg, Va., and long prominent in the cast pipe industry, died May 7, following an operation.

* * *

John J. Glesmann, 55, for several years with the Western Electric Co., New York, and later in charge of production for the American Bosch Magneto Co., Springfield, Mass., died recently. He was forced to relinquish his activities with the Bosch company because of ill health.

* * *

Eugene W. Handlan, 59, vice president and treasurer of the Handlan-Buck Mfg. Co., one of the oldest makers of railroad supplies in St. Louis, died at Hot Springs, Ark., last week. He was the eldest son of the late H. W. Handlan, founder of the business. Mr. Handlan was born and educated in St. Louis, and his entire business career was spent with the railway supply company.

* * *

Paul T. Brady, 71, with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., 34 years, and actively engaged in the electrical industry since 1881, died May 3 in Portland, Oreg. Mr. Brady was born in Cooperstown, N. Y., attended Exeter academy, and taught school for a few years after graduation. Among the public utilities which Mr. Brady either founded, reorganized, or assisted in developing, are the Rochester railways, the Rochester Gas & Electric Co., the Niagara, Lockport & Ontario Power Co., the Central Georgia Power Co., the Virginia Power Co., the Missouri River Power Co., Southeastern Light & Power Co., and many others.

Coking Coal Costs Down

In 1926 the average cost per ton of coal consumed in by-product coke ovens of the United States was $3.88 per ton and in beehive ovens $2, states the federal bureau of mines. This compares with $3.86 for the by-product ovens and $2.05 for beehive ovens in 1925.

Open-Hearth Committee Discusses Furnace Design and Control

MORE than 70 open-hearth operators attended the American Institute of Mining and Metallurgical Engineers' conference on open-hearth steel manufacture at the Ohio hotel, Youngstown, O., May 3 and 4. Particular interest was displayed in the comments of C. H. Herty, Jr., bureau of mines, Pittsburgh dealing with the solubility of iron oxide in iron. Dr. Herty explained in detail how at the Bourne Fuller Co., Cleveland four cast of iron were made at its blast furnace varying in silicon content, the furnace thrown off and a fifth cast obtained. The various casts were made into steel and two heats of the latter rolled into billets and rods and later galvanized. Tests showed that low-silicon steel galvanizes better than steel of normal silicon content. At constant silicon the iron is clean but when there is a decided change in the silicon content the silicates increase. To rid open-hearth steel of silicates Dr. Herty suggested an extra good slag and the addition of manganese to the heat. He explained that a highly oxidized slag depends upon the temperature of the open-hearth furnace and suggested that a low oxide slag can be made by running the furnace about 200 degrees lower temperature.

At the close of the final session Friday morning L. F. Reinartz, American Rolling Mill Co., Middletown, O., was re-elected president of the open-hearth committee and C. H. Herty Jr., was elected secretary for the ensuing year. Friday afternoon members were guests of the Republic Iron & Steel Co. and the Youngstown Sheet & Tube Co.

Lead in Scrap Affects Quality of Steel

IN DISCUSSING suitable methods for charging light, bushy scrap in an open hearth, Kenneth McCutcheon, American Rolling Mill Co., Ashland, Ky., stated that in his opinion it is best to charge all the scrap at once rather than at different intervals to avoid cooling the furnace. Many open hearths recently have been increased in size with beneficial results. W. F. Davis, Youngstown Sheet & Tube Co., Indiana Harbor, Ind., told of increasing the length of a furnace and of enlarging the bath 6 feet at his plant which now permits tapping 106-ton heats instead of 90 tons as previous. The life of the furnace ranges from 289 to 438 heats. Whereas the back wall formerly required patching every 60 heats, the furnace now runs for 280 heats before any patching is required at this particular location.

In discussing the best method for charging pig iron in cold metal practice, C. M. Cooke, Commonwealth Steel Co., Granite City, Ill., explained that all cold charges were put in his 40-ton furnaces. Our practice, he stated, is to first charge lime and then scrap which fills the furnace. It requires two hours to melt the scrap to a low level after which cold pig iron is added to the bath. He pointed out that there is no more of a melting loss when this practice is followed than when all the material is added at one time. The time factor also is the same in either case.

H. A. Young, Allegheny Steel Co., Brackenridge, Pa., in speaking of the best type of checker brick and method of laying, pointed out that the best type of brick to use for this purpose depends upon the size of the chamber. In the speaker's opinion deep checkers are better than shallow checkers. The speaker pointed out that the checkers were changed from 200 to 240 heats. In executing this work one-half of the checkers are removed and the remainder staggered down to the bottom of the chamber. The speaker emphasized that an effort is made to get the same amount of new brick in each chamber. About two-thirds of the brick are reclaimed.

Checkers Built of Silica Brick

E. A. Smith, Andrew Steel Co., New port, Ky., mentioned that at his plant a furnace is in operation built with silica brick checkers and vertical flues. Approximately 810 heats have been tapped without any appreciable repairs having to be made. The practice followed is to blow the top off about every 50 to 75 heats. The brick employed is 3 x 4½ x 12 inches.

In speaking on the design of centers used for hot repairs and regular repairs to open-hearth roofs, J. R. Stuart, Colorado Fuel & Iron Co., Pueblo, Colo., described in detail the steel centers used at his plant. Sectional pieces to patch along the skewback are employed by G. D. Walters, Atlantic Steel Co., Atlanta, Ga. Mr. Walters pointed out that the checkers are installed in three sections and that he aims to put 50 per cent of the new checkers on top. In discussing slag removal J. R. Stuart described how at his plant slag is removed by the aid of dynamite set off by a mechanical fuse. The dynamite is planted while the slag still is hot. G. D. Tranter, American Rolling Mill Co., Middletown, O., explained that dynamite is used at his plant for the removal of slag, approximately 48 hours being required to take out 6 feet on the bottom. R. L. Leventry, Republic Iron & Steel Co., Youngstown, O., stated that slag removal at his plant is accomplished by an air drill and a billet 8 x 8 inches and 35 feet long as a pry. After the slag is cut back the billet is set in place with the fulcrum close to the slag pocket and the crane lowers a ladle or other heavy object on the outer end of the billet.

At the Wisconsin Steel Co., South Chicago, Ill., E. L. Ramsey explained that two-fifths of the slag is usually out of the furnace before repairs are undertaken. The practice followed is to use a drill and undermine the pocket back to the slope. When the furnace is off the practice is to use the crane and a monkeyhook. Approximately 40 to 48 hours are required to clean out a pocket.

At the Ashland, Ky., works of the American Rolling Mill Co., Kenneth McCutcheon stated that doors are put on the slag pocket to minimize the time in replacing the seals. These are lined with 9-inch brick and are made of cast iron. In explaining the method of hot patching the roof Mr. McCutcheon stated that normal

patching is accomplished with a small center. Patching from front to back is done by suspending rails and covering these with sheet iron which permits the workmen to install the roof without danger of losing the keys.

Concensus of opinion is that furnace insulation is successful. It was brought out that in Germany the entire bottom of the furnace is insulated. Mr. McCutcheon stated that two furnaces at his plant were completely insulated over the bottom of the uptake. In his opinion insulation should effect a saving in fuel and afford increased tonnage and at the same time prevent air infiltration.

In discussing the correct pressure of oil to use in the operation of open-hearth furnaces one member contended that better steel is obtained with less inclusion with low-pressure oil than with high pressure. It was brought out that superheated steam reduces the oil consumption and enables a shorter flame to be obtained.

During the afternoon session of May 3 the effect of impurities in automobile scrap, such as nickel, chrome, babbitt, brass and aluminum on furnace operations and upkeep of bottoms, was discussed at length. C. Foster, American Steel Foundries, East St. Louis, Ill., stated brass gives difficulty in the bottom. The bottom seems to absorb impurities and after a heat is tapped a fume is given off. J. M. Hughes, Sharon Steel Hoop Co., Sharon, Pa., states that no difficulty is encountered with nickel but that chrome has a tendency to give a hard slag to shape up.

Scrap Is Assorted

F. B. McKune, Steel Company of Canada, Hamilton, Ont., stated that at his plant the practice is to throw the scrap on the ground and separate any babbitt found in the metal. He explained that in ten carloads of scrap approximately 500 pounds of babbitt metal is found. He estimated that it costs approximately $1.50 a ton to handle the material in this way. G. D. Tranter pointed out that lead frequently gives trouble in open-hearth practice. When this material is found in the charge the only remedy is to wash out the bottom and then build up again. He cited the fact that chromium gives a mucky slag. Material such as nickel, chrome and other alloys found in automobile scrap can be eliminated only by close inspection and purchasing from reliable dealers. Continuing he said that lead causes checks on sheet bars and a scabby condition. He pointed out that it is not always metallic lead that causes the difficulty but also lead in the form of a heavy coating of paint on bridge scrap. In many cases 0.008 per cent lead in the steel will give trouble.

Control of furnace temperatures and atmospheres from a combustion standpoint is commanding more attention among open-hearth operators. Kenneth McCutcheon cited an Isley control furnace with a pyrometer tube in either end. When the stack temperature reaches a predetermined point a bell automatically is rung which indicates the furnace is to be reversed. Flow meters also are installed which show the pressure of the gas flow to the furnace. The speaker pointed out that gages show that more gas and air go through one end of the furnace than the other and that regulation of these seem to point to a more efficient operation. G. D. Tranter described a furnace recently equipped with pyrometric control. Air for combustion was supplied by a fan in order to measure the amount going into the furnace. Draft gages were installed on the checkers, up-takes, flues and stack. Tests run on this particular furnace indicate that measuring of the incoming air volume is decidedly important. During these tests the fan speed had to be changed throughout the heat showing that it frequently is necessary to change the volume of air. From 4500 cubic feet of air up to 7000 cubic feet of air per minute were required. One member stated that pyrometric control affords the saving of 3 gallons of oil per ton of steel.

In discussing the use of magnesite, dolomite or patented burned refractories on furnace bottoms, W. T. Kilgore, Erie Forge Co., Erie, Pa., pointed out that the cost was one-half when using raw dolomite and magnesite than when using patented materials. H. B. Hubbard, Inland Steel Co., Indiana Harbor, Ind., pointed out that for each ton of steel approximately 2 pounds of magnesite and 52 pounds of burnt dolomite were employed for making bottoms. L. E. Yost, Corrigan McKinney Steel Co., Cleveland, stated his practice was to use Austrian magnesite for bad holes and patented magnesite for the slag line. The charges include 40 to 62 per cent pig iron although the speaker mentioned that higher metal charge means a higher refractory cost. Tap holes are closed with treated dolomite while raw dolomite is used to patch up the doors.

In making up tap holes one member stated his practice was to put in magnesite and about 30 per cent of portland cement. Another member cited 80 per cent magnesite and 20 per cent portland cement for tap holes. It was developed that low-carbon heats affect tap holes quicker than high-carbon heats. Whether tap holes should be made up of raw dolomite or dead burnt dolomite or magnesite invited prolonged discussion. Concensus of opinion was that for the safety of the workmen a higher grade material than raw dolomite should be employed for this purpose.

Effect of dolomite gun on bottom making time of a furnace in one case showed that by the use of such a gun the time was reduced from 49 to 31 minutes. Moreover 12 third helpers were eliminated.

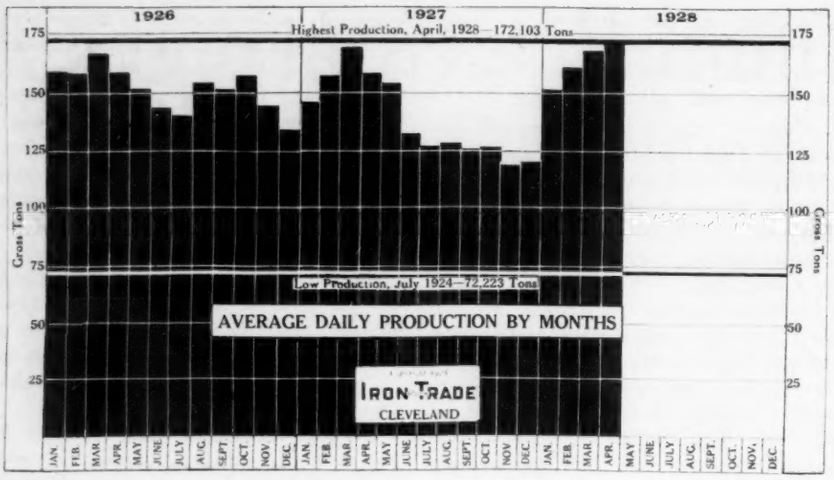
At the Friday morning session it was brought out that blisters in cold finished and galvanized steel are due largely to piping, cavities and croppage. It was brought out that low-temperature annealing will produce a gray galvanized finish and steel of large grain structure. A test recently was made which included dissolving of the zinc coating, heating three sheets at a time, hot rolling and cold rolling and then regalvanizing the material. The sheets in each case took a coating that was satisfactory from every standpoint and convinced the metallurgical department that the defects in question came from the annealing operation. E. A. Smith found that when the crop was increased and sufficient lime added to the open-hearth bath little difficulty was encountered. But when the speed of the furnace was increased by cutting down the lime addition, trouble usually was encountered.

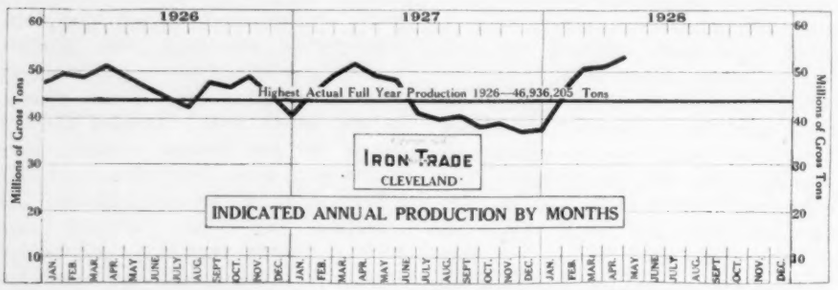
Pickling Cycle Important

An interesting condition was cited by L. F. Reinartz, American Rolling Mill Co., Middletown, O., in connection with fine blisters on galvanized sheets. At the time the blisters were discovered construction changes were being made in the pickling department. Investigation developed that it was taking twice as long to get the sheets into the pickling tank than before construction was undertaken. The pickling cycle was speeded up and the trouble with blisters disappeared immediately. It was found that sheets with the most inclusions had more of a tendency to blister. The pickling time while the construction work was under way was 40 minutes but this was cut one-half and the temperature and acid concentration changed. This eliminated the tendency of the coating to blister.

In the opinion of A. E. Egler, Youngstown Sheet & Tube Co., Youngstown, O., blisters in galvanized sheets are caused by a sloppy working furnace. When this condition is dis-

(*Concluded on Page* 1250)





April Ingots Set New Record

ANOTHER steel ingot production record was attained in April when the average daily rate rose to a figure of 172,103 gross tons per day. The previous high point was in March, 1927, with 167,973 tons. The new figure is an increase of 4130 tons per day, or 2.46 per cent. Compared with the March rate of 166,945 tons, April was ahead by 5158 tons, or 3.09 per cent. One year ago, the output was 158,744 tons per day. It is interesting to note that in only four years since ingot figures were started in 1917 has the April production exceeded March, these years being 1918, 1922, 1923 and 1928, and in the latter two, new records were set.

According to statistics compiled by the American Iron and Steel institute, total production in April was 4,302,573 gross tons, against 4,507,520 tons in the preceding month, the loss being 204,947 tons. April, however, had only 25 working days, against 27 in March. Had April had 27 working days, the total output as well as daily rate would have constituted a record. The rate for the first four months of this year with 163,560 tons per day is the highest for any four consecutive months in history; the rate for the corresponding months of last year was 157,908 tons.

With a production of 172,103 tons per day in April and 311 working days in the year, the indicated annual production was 53,500,000 tons. For March the rate was 52,000,000 tons. The institute has just announced that the country's capacity for open-hearth and bessemer ingots was 58,627,910 gross tons as of Dec. 31, 1927. On this basis, operations for April represented 91.29 per cent, against 88.56 per cent in March and 86.26 per cent in April one year ago.

Steel Ingot Production—1927-1928

94.68 Per Cent of Industry Reporting

Gross Tons

1927	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,042,133	545,596	3,587,729	3,789,874	26	145,764	79.21
Feb.	3,043,492	565,226	3,608,718	3,812,046	24	158,835	86.31
March	3,702,660	590,709	4,293,369	4,535,272	27	167,973	91.28
April	3,341,750	565,440	3,907,190	4,127,335	26	158,744	86.26
Total 4 mos.	13,130,035	2,266,971	15,397,006	16,264,527	103	157,908	85.81
May	3,273,593	557,785	3,831,378	4,047,251	26	155,663	84.59
June	2,823,107	486,053	3,309,160	3,495,609	26	134,446	73.06
July	2,596,349	436,883	3,033,232	3,204,135	25	128,165	69.65
Aug.	2,806,347	505,596	3,311,943	3,498,549	27	129,576	70.41
Sept.	2,622,977	471,548	3,094,525	3,268,881	26	125,726	68.32
Oct.	2,643,562	495,845	3,139,407	3,316,292	26	127,550	69.31
Nov.	2,478,627	481,599	2,960,226	3,127,015	26	120,270	65.36
Dec.	2,557,955	448,154	3,006,109	3,175,484	26	122,134	66.37
Total	34,932,552	6,150,434	41,082,986	43,397,743	311	139,543	75.83
1928							
Jan.	3,280,247	498,746	3,778,993	3,991,332	26	153,513	81.43
Feb.	3,308,728	521,366	3,830,094	4,045,304	25	161,812	85.84
March	3,700,411	567,309	4,267,720	4,507,520	27	166,945	88.56
April	3,509,637	564,039	4,073,676	4,302,573	25	172,103	91.29
Total 4 mos.	13,799,023	2,151,460	15,950,483	16,846,729	103	163,560	86.76

Figures exclude crucible and electric ingots. Operation percentages for 1927 are based on an annual open-hearth and bessemer steel ingot capacity of 57,230,350 tons, as of Dec. 31, 1926; for 1928, on 58,627,910 gross tons as of Dec. 31, 1927.

Discuss Furnace Design

(*Concluded from Page* 1249)

covered the practice followed is to stop making sheet bar heats and schedule the furnace on steel for other purposes. After two years' investigation J. D. Walters, Lukens Steel Co., Coatesville, Pa., is of the opinion that seams, pits, scabs and bad tops, etc., come from soft melting heats.

Large skulls in ladles and over-oxidized steel are contributing factors toward blisters in galvanized steels according to G. D. Tranter. The speaker pointed out that 0.08 to 0.12 carbon steel heats with 0.35 to 0.45 per cent manganese are less likely to blister than when the manganese is 0.30 per cent. Causes of blisters may be traced back to soft melting heats which have to be repigged according to Mr. Tranter.

The surface of small ingots poured from rimming steel can be improved by using a small nozzle and opening the ladle as easily as possible to prevent splash of the mold in the opinion of J. W. Mills National Stamping & Enameling Co., Granite City, Ill. The speaker recommended the lengthening of the nozzle at least 2 inches whenever the steel catches the side of the ingot mold.

European Steel Prices Advance

Markets Stronger in France, Belgium and Germany—Less Competition Felt by British Makers—2000 Tons of Pig Iron Sold for Delivery to Philadelphia—Holland Places Order for 10,000 Tons of Steel Bars in Germany

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, May 5.—(*By Radio*)—Advancing prices of continental steel have reduced competition from that quarter in the British market, except for billets, on which British makers also are increasing prices. Makers of special steels at Sheffield are occupied with orders for several months. Wm. Beardmore & Co.'s Mossend Steelworks is being reopened, probably due to improvement in orders for ship plate. Demand for galvanized sheets is easing off, but the market for tin plate is holding up well and some mills are booked to the end of the year. Pig iron business has improved slightly. It is noted that 2000 tons has been purchased by American consumers for shipment to Philadelphia.

A report from Berlin states domestic demand in Germany is more active, owing to fears that prices will be advanced. A syndicate has been formed for marketing medium-gage sheets. Vereinigte Stahlwerke has obtained an important order for steel railroad ties for delivery to South Africa. Ten thousand tons of steel bars has been sold at £5 6s ($25.76) f.o.b., for delivery to Holland.

The Belgian market is more active, and prices are higher. An important Greek railroad contract has been placed with the Belgian So. Anon. D'Ougree-Marihaye. French manufacturers of iron and steel commodities report the present market in a much stronger position than the market of a few weeks ago. Deliveries on some materials now are three months deferred.

Lower Taxes Promised British Steelmakers

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., April 27.—(*European Staff Service*)—Strong representations made by the iron and steel trade to the government finally have brought a sympathetic response, though in a direction which was not expected. Mr. Churchill has promised that in October next year there shall be a relief in local rating to the extent of 75 per cent. Every expression on behalf of the government has discouraged any expectation of relief under the Safeguarding of Industries Act. The steel-using industries, especially shipbuilding, are strongly represented in the house of commons, and an additional obstacle is the opposition to be expected from steel rerollers. A serious setoff to the rating relief is the fact that it does not take effect until October, 1929.

Sterling $4.88

It is estimated that the cost to the treasury will be something like 29 millions sterling. The steel companies have been reckoning their rating costs in proportion of shillings per ton.

Stocks are rapidly decreasing and it should be possible shortly to start more furnaces. In east coast hematite the present production is fully absorbed. Coke remains at 18s ($4.40) delivered at the furnaces in Middlesbrough. Blast furnace coke ought to have been dearer by now, but the severe restriction of output

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, May 7	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.10	3 6 0*	$15.13	3 2 0	$15.13	3 2 0	$15.62	3 4 0
Basic	.....	.....	14.64	3 0 0	14.64	3 0 0	15.37	3 3 0
Basic-bessemer	16.84	3 9 0†	14.64	3 0 0	14.64	3 0 0	14.64	3 0 0
Hematite, Phosphorus 0.02-0.05	17.08	3 10 0	22.26	565*	.....	.....	17.08	3 10 0
SEMIFINISHED STEEL								
Billets	$28.67	5 17 6	$22.57	4 12 6	$22.57	4 12 6	$22.45	4 12 0
Wire rods	47.58	9 15 0	28.06	5 15 0	28.06	5 15 0	28.06	5 15 0
FINISHED STEEL								
Standard rails	$37.82	7 15 0	$31.11	6 7 6	$31.11	6 7 6	$31.11	6 7 6
Merchant bars	1.53c	7 0 0	1.19c	5 8 0	1.19c	5 8 0	1.17c	5 6 0
Structural shapes	1.61c	7 7 6	1.03c	4 14 0	1.03c	4 14 0	1.06c	4 16 0
Plates, ship, bridge and tank	1.77c	8 2 6	1.38c	6 5 0	1.38c	6 5 0	1.49c	6 15 0
Sheets, black, 24 gage	2.18c	10 0 0	2.31c	10 10 0	2.31c	10 10 0	2.18c	9 18 0
Sheets, galvanized, 24 gage, corrugated	2.83c	13 0 0	2.92c	13 5 0	2.92c	13 5 0	2.92c	13 5 0
Bands and strips	2.23c	10 5 0	1.35c	6 3 0	1.35c	6 3 0	1.18c	5 7 0
Plain wire, base	2.12c	9 15 0	1.54c	7 0 0	1.54c	7 0 0	1.60c	7 5 0
Galvanized wire, base	2.94c	13 10 0	1.98c	9 0 0	1.98c	9 0 0	2.04c	9 5 0
Wire nails, base	2.51c	11 10 0	1.62c	7 7 6	1.62c	7 7 6	1.87c	8 10 0
Tin plate, base box 108 pounds	$4.45	0 18 3	.....	.....	.....	.....	$ 6.83	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.10	3 6 0	$17.53	445(2)	$16.32	585	$18.67	78
Basic pig iron	.....	.....	18.91	480(1)	14.93	535	21.06	88
Furnace coke	2.93	0 12 0	5.91	150	5.16	185	5.15	21.50
Billets	28.06	5 15 0	22.26	565	23.72	850	28.00	117
Standard rails	1.74c	8 0 0	1.36c	755	1.43c	1,100	1.53c	140
Merchant bars	1.63c	7 10 0	1.22c	675	1.22c	935	1.49c	137
Shapes	1.72c	7 17 6	1.17c	650	1.17c	900	1.46c	134
Plates, ship, bridge and tank	1.88c	8 12 6‡	1.42c	790	1.43c	1,100	1.67c	153
Sheets, black, 24 gage	2.51c	11 10 0	2.74c	1,520	2.41c	1,850	2.40c	220
Sheets, galvanized 24 gage, corrugated	2.86c	13 2 6	3.42c	1,900	3.80c	2,925	3.82c	350
Plain wire	2.12c	9 15 0	1.71c	950	1.89c	1,450	2.34c	215
Bands and Strips	2.29c	10 10 0	1.42c	790	1.54c	1,185	1.72c	158

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.93) f. o. b. Ferromanganese £20 10s 0d ($100.04) delivered Atlantic seaboard, duty paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

at the collieries has reduced the amount of smalls available for coke making, although foundry coke has become appreciably cheaper.

New business in steel is scarce. The powerful plate mills quickly dispose of the comparatively few orders for ship plates, and there is not enough structural work to go around. India has been coming into the market recently with rail orders, and a demand for bridge building material. The chief trouble with the steel mills is the small tonnages ordered and the enormous variety of sizes having to be dealt with, some mills having 30 roll changes in a week.

The position continues to be rather favorable in regard to Continental competition. There seems every probability that German costs will increase, and German steelmakers have lately made representations to the government, apparently, with the object of bringing pressure upon the workers to abate their demands. There is an impression that joists offered at £4 16s ($23.42) Antwerp are rather largely bought in London and Manchester. They make no impression in the Midlands. Even No. 3 Belgian iron which has sold well here has fallen to insignificant tonnages, and Midland users are standing out for $6 ($29.28) delivered, against the £6 5s 6d ($30.62) quoted.

Heavy steel scrap is firm at £3 5s ($15.86) delivered South Wales. Sellers have tried to get £3 7s 6d ($16.47), but so far have not succeeded. In view of increasing scarcity of scrap a strong agitation has commenced among users in favor of calling on the government to prohibit exports.

Galvanized sheets have settled to a basis of £13 ($63.44) and it is likely that a good order could command less. The trade has become languid, and mills are only partially employed. The makers of sheets have made a special reduction in 30-gage sheets from £18 5s ($89.06) to £17 15s ($86.62).

The Welsh tin plate trade is rapidly attaining boom conditions, orders being taken freely to the end of the year and many firms are fully booked until August. Inquiries are substantial, practically from all over the world, the canning industries taking much.

French Coke Total High

Paris, April 25.—(*European Staff Service*)—Output of coke at French Collieries in February almost reached the record figure of January. February coke imports included 317,633 tons from Germany, 62,407 tons from Belgium and 31,413 tons from Holland. Exports of coke in February included: Italy, 9485 tons; Switzerland, 8604 tons; Indo-China, 1748 tons; Belgium and Luxemburg, 1141 tons. Comparisons follow:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1925	255,410	416,880	39,440
1926	313,950	462,915	39,320
1927	339,015	395,580	33,430
1928			
Jan.	357,475	473,018	25,840
Feb.	343,186	411,455	23,119

British Prices Lower in March Exports

London, April 24.—(*European Staff Service*)—Board of trade returns for March, 1928, give average British export prices per gross ton for a certain number of iron and steel products. These prices are compiled from actual contracts made several months ago, which accounts for the difference between these quotations and the base prices regularly quoted in our columns.

Compared with those prevailing a year ago, prices in March this year were lower, with the exception of beams, rails, and plates. Compared with those of the preceding month, prices were lower, except galvanized sheets.

Foundry pig iron was £1 15s 7d ($8.59) less than a year ago and 18s 4d ($4.40) less than in February this year. Beams were 2s 11d (70.00c) more than a year ago and 15s 5d ($3.20) less than in the previous month. Rails were 9s 6d ($2.28) more than a year ago and 5s 9d ($1.38) less than in February this year. Plates were 18s 2d ($4.36) more than a year ago and 1s 2d (28.00c) less than in the preceding month. Black sheets were £2 7s 8d ($11.54) less than a year ago and 2s 11d (70.00c) less than in February this year. Galvanized sheets were £2 19s ($14.26) less than a year ago and 3s (72.00c) more than in the previous month. Tin plates were £2 4s 10d ($10.86) less than a year ago and 8d (16.00c) less than in February this year.

March, 1928

	£	s	d	$
Foundry pig iron	3	4	5	15.61
Beams	8	6	4	40.32
Rails	8	12	0	41.68
Plates	10	3	2	49.26
Black sheets under ¼-inch thick	12	5	4	59.48
Galvanized sheets	15	11	0	75.39
Tin plates	10	13	4	95.35

German Steel Sales Are Lighter

BERLIN, April 23.—(*European Staff Service*)—Booking of orders in the German iron and steel industry has fallen off of late. Nevertheless, the situation cannot be called serious for producers as they have sufficient orders to keep the works busy at least two months. Decrease of new orders from railroads in particular is felt keenly, and many steps taken by the works to curtail output are declared to have resulted therefrom. As a matter of fact, the United Steel Works Co. had on hand April 1 only 92.3 per cent of the unfilled orders it had Sept. 30, 1927, and similar developments have taken place with other concerns. The value of sales of the United Steel Works Co. decreased from 362,278,000 marks in the last quarter of 1927 to 360,425,000 marks in the first quarter of this year, mainly due to reduction in value of domestic sales from 260,572,000 marks to 245,490,000 marks, whereas the value of exports increased from 101,706,000 marks to 114,935,000 marks. The growing importance of export business in case of a reduction of domestic sales is clearly reflected by the foregoing figures.

Steelmasters already are preparing for higher steel prices resulting from the expected increase in coal quotations. The Ruhr coal miners have of late obtained official approval of a wage advance of 8 per cent, but this percentage is claimed to be too small for the employes, while the employers declare they are not in a position to bear this additional burden. The Schmalenbach experts state the position of the Ruhr coal industry is unsatisfactory as coal now is produced at a loss of 0.27 marks per metric ton, and it is believed that various troubles may arise from this statement.

United Steel Works Co. recently has been compelled to lay idle some of its blast furnaces, and the same has been the case with the firm of Krupp, owing to unsatisfactory booking of orders. The German pig iron output in March increased to 1,170,476 metric tons, this figure being considerably above any previously reached. Raw steel production in March also was greater than ever before, reaching 1,421,524 tons. Owing to slackening of domestic requirements Germany must try to sell these additional tonnages abroad; as a matter of fact, German exports have recently improved. The quotation for merchant bars again has firmed up to £5 4s ($25.20), after having been slightly below that figure. Wire and wire products also have been sold in fair tonnages abroad, especially to the United Kingdom. Quotations for pipe have eased, but at the lower level of prices foreign orders have come in at a better rate. Unfilled orders for wire rods afford occupation to the mills for two to four weeks. It is expected that a new order, worth several million marks, for sleepers for the South African railroads will be placed in July, after the United Steel Works and Krupps have executed a similar order worth £171,000 to the satisfaction of the South African railroads.

According to a statement just published, the output of the United Steel Works Co. of all products except pig iron in the quarter ending March 31 was slightly in excess of that of the preceding quarter, as is shown by the following table, in metric tons:

	Oct. to Dec., 1927	Jan. to March, 1928
Pig iron	1,725,719	1,703,105
Raw steel	1,831,538	1,842,187
Coal	6,647,600	6,897,000
Coke	2,309,270	2,321,000

Sheets Should Be Distributed by Jobbers, Belief of Producers

IMPORTANT ground work for the solution of sheet merchandising problems was laid at the seventeenth annual convention of the metal branch of the National Hardware association at the Copley-Plaza hotel, Boston, May 3-4. Spurred on with the sense of the seriousness of the sheet distribution question, members participated freely and frankly in all discussions, and numerous constructive suggestions that should be helpful from the standpoint of marketing, were developed.

Of particular interest was the address of George H. Charls, president of the newly formed National Flat Rolled Steel Products association, Cleveland, who went exhaustively into prevailing conditions in the sheet steel industry and held out to jobbers a promise of fullest co-operation of producers in the development of means for the solution of their mutual merchandising problems. He asserted that replies to a questionnaire sent producers revealed the virtually unanimous belief that distribution should be made through jobbers.

The metal branch appointed a committee, headed by Robert H. Lyon, of Lyon, Conklin & Co. Inc., Baltimore, to co-operate with a committee to be appointed by Mr. Charls. The metal branch went on record as favoring a revision of the Sherman anti-trust laws and also as favoring a more active promotion of terne roofing. Simplification standards were discussed at length.

Close to 100 were registered, with the annual banquet unusually well attended. Retiring officials were re-elected for the ensuing 3-year term.

Reduced Prices Would Precipitate Wage Cuts

IF SHEET mills are forced to take further reductions in prices, a reduction in wages soon may be precipitated, and this would be striking at the very heart of prosperity, according to Mr. Charls. Such a reduction, he said, would have a tremendous effect, if for no other reason than that steel has long been regarded as a barometer of business. Let even 5 per cent receive a reduction in wages, and the other 95 per cent would draw into their shells, with a startling falling off in demand. It is imperative that any tendency in this direction be checked, he said.

Mr. Charls declared co-operation between jobber and mill associations was necessary not only in fostering badly needed confidence, but in establishing a compositization of ideas concerning business ethics. He condemned the secret rebate as unfair and unwise. The secret rebate of today is the published price of tomorrow, he said; and that one who wantonly cuts prices to one will cut prices to all. The speaker asserted that the old order taker was a merchandising prince compared with the order buyer of today.

Discussing differences between mills and jobbers, he said that it should be borne in mind that some mills at one time started as jobbers and that their present policies are the result of causes dating beyond the life of many jobbers. He believed that it was up to the jobbers to negotiate their differences with the mills which compete with them, adding that an association can only be a harmonizing agency.

Under some circumstances, Mr. Charls declared, it might be justly said that many jobbers have forced mills to go into the jobbing business. He based this statement on the fact that often the jobber ceases to warehouse complete stocks for their customers' requirements and forces the mills to do so. These mills function in every way as a jobber except in selling, he said. Further, many jobbers become interested in every possible substitute for iron and steel, sacrificing their identity as constructive distributors of these products. A remedy in most cases, he said, can be found in more thorough understanding.

Following somewhat along this trend upon another occasion during the meeting, Mr. Charls asserted that he could understand the attitude of a mill, which upon being unable to obtain warehouse representation in a district, would endeavor to get business out of the territory by selling direct. Baltimore, where conditions are unsettled, was cited as a possible case in point, whereupon a distributor from that city responded that as there were but six jobbers there, it would be impossible for them to handle materials from all the mills who might care to do business in that territory.

Discussing simplification, Mr. Charls declared it to be a definite means of reducing distribution costs, and urged that there be no temporizing, or swerving from established standards. He appealed to jobbers to assist manufacturers in eliminating for all time the practice of making and selling roofing pipe and trough of inadequate, light and flimsy gages.

He thought it would prove helpful to have drawn up a definition of a jobber, with the line of demarcation between the jobber and the dealer definitely fixed. The speaker referred to the tremendous increase in demand for sheets during the past five years as due entirely to the trade extension program. He wondered if jobbers had co-operated and capitalized upon this constructive effort. He pointed out that in 1925 jobbers distributed 17.33 per cent of sheets sold, but that last year they distributed less, 15.8 per cent of a total of 4,123,417 tons of sheets distributed. This remark brought a reaction from one jobber, who declared that the decline in jobber distribution was due to direct selling by the mills.

Terne plate came in for considerable discussion. While doubt was expressed by at least one or two members as to whether terne plate for roofing would ever assume the position it once had, it was generally believed that considerable impetus to sales could be provided. It was deemed essential that promotion should be to the consumer direct, and there appeared to be the general belief that this promotion should be handled by the Sheet Steel Trade Extension committee. A member of the Metal Club of Philadelphia said that that organization had endeavored to interest the committee in this problem for a con-

siderable time, but without success. It was pointed out, however, that the committee included most of the producers of terne plate, and that possibly by levying an extra although modest assessment and by inviting other producers to participate, a satisfactory plan might be evolved. A resolution was passed directing the secretary of the metal branch to advise the various manufacturers of terne plate that it was the sense of the meeting that advertising of roofing terne should be undertaken on a national scale.

A. L. Philbrick, of the Congdon & Carpenter Co., Providence, R. I., and chairman of the overhead expense committee of the National Hardware association, presented a preliminary statement of expenses of seven exclusive metal jobbers for 1927, as shown in the accompanying table. The seven showed, as a group, an average profit of 6 per cent, he pointed out.

To place prices on a more profitable plain, F. J. McNeive, of W. F. Potts Sons & Co. Inc., Philadelphia, believed that some pronounced change in the methods of quoting might be necessary. He believed that a leaf might be taken from the sheet copper sellers, each of whom establishes a published price and then offers a fixed concession to case-lot buyers. He suggested the advisability of the galvanized sheet manufacturer also establishing a published price, with concessions for the dealer and also for the carload buyer regardless of who he may be.

Members of the metal branch affirmed the belief that the wholesaler who has a favorable mill contract should base his selling prices on the market and not endeavor to undersell the mills. It was emphasized by one speaker that if the mills advance prices, the jobbers have a legitimate and sound reason for doing so also.

Asserting that most warehouse problems are local problems, Chapin E. Harris, of the Brown-Wales Co., Boston, stressed importance of jobbers within a district organizing as a first step in co-operative effort.

The speaker urged a policy of standardization to reduce sizes and classifications to be considered as standard warehouse items. Other than standard items, he said, could then carry heavier extras, and become a source of greater, although reasonable profit.

Mr. Harris believed also that every effort should be made to collect data covering major expense items such as delivery costs per ton handled, delivery costs per ton mile, sales costs per ton and sales costs per customer.

As chairman of the sheet steel simplification board, W. L. Latta, of the Wheeling Steel Corp., Wheeling, W. Va., asserted that importance of sheet steel as a roofing material justifies a separate simplified practice recommendation. This suggestion was approved by the members, with the title of the practice recommendation to be "Sheet Iron and Steel Roofing." At his suggestion, standards for roofing and siding were reaffirmed, with the added provision that standard weights be subjected to the usual mill tolerances of 2½ per cent plus or minus.

Mr. Latta reported a gain in the adoption of the 28-gage minimum for roofing from 51 per cent a year ago to 55 per cent, and the fact that the adoption of the minimum is not considerably greater was due chiefly to the use of 29 gage in some districts.

H. R. Colwell, division of simplified practice, department of commerce, Washington, said that the advancement of standardization was dependent upon frequent audits of the usage of existing or recommended practices. It was also essential that the group which develops standards should promote them, he said.

G. F. Ahlbrandt, American Rolling Mill Co., Middletown, O., described with aid of lantern pictures, the process of rolling continuous sheets, and predicted that large scale operations are going to have an important bearing on the merchandising of sheets. He believed that within five years large producing units would be generally adopted and that due to the heavy expenditure involved, there would be a merging of producing effort, which would materially reduce the number of sheet producers. He estimated that it would require at least $6,000,000 or $7,000,000 to install one of these larger units. The continuous process mentioned above was described in the June 16, June 23, June 30 and July 7 issues of IRON TRADE REVIEW.

The speaker, commenting upon merchandising, believed that jobbers often handle too many products, and thought that jobbers who are essentially distributors of iron and steel should be discouraged in the handling of substitutes. He pointed to one jobber who within the past year sold 6000 tons of prepared roofing.

Asserting that American business is facing five to 10 years of exceptional prosperity, C. F. Weed, vice president, First National Bank of Boston, paid strong tribute to the influence of machinery upon prosperity.

In predicting unusual prosperity over the next five or 10 years, the speaker made it clear that there would probably be many lines that would not be affected. He declared at that there were now 330 different industries, involving more than 250,000 establishments. Some, he believed, would even pass out of existence, but in the main times would be good.

Report Expenses and Profits for 1927

Preliminary Statement of Seven Exclusive Metal Houses

	House No. 1	2	3	4	5	6	7	Average
Sales	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Less discount allowed	0.97	.....	.....	.....	0.72	0.55	0.78	0.75
Net sales	99.03	100.00	100.00	100.00	99.28	99.45	99.22	99.25
Cost of goods sold	80.66	81.53	76.18	81.95	77.93	73.44	84.42	79.36
Less discount on purchases	1.51	.....	0.15	.....	0.90	0.94	1.30	0.96
Net cost goods sold	78.55	81.53	76.03	81.95	77.03	72.50	83.12	78.40
Gross profit	20.48	18.47	23.97	18.05	22.25	26.95	16.10	20.90
Deduct:								
Administrative expense	5.11	5.83	5.73	9.26	6.48	7.50	4.10	6.29
Warehouse and handling expense	5.00	3.90	6.66	4.18	5.22	6.80	2.78	4.93
Selling expense	4.37	4.20	6.73	5.57	4.21	5.17	3.34	4.79
Fixed charges	4.60	2.21	2.54	2.89	3.83	2.57	1.16	2.83
Interest on borrowed money and 6 per cent on capital and surplus	2.35	2.09	1.77	.....	2.70	3.30	2.55	2.46
Loss from bad debts	0.73	0.50	0.16	.....	0.30	0.42	0.92	0.50
Federal taxes	0.12	.....	0.01	.....	0.76	0.62	0.32	0.36
	22.28	18.73	23.60	21.90	23.50	26.38	15.17	22.16
Less interest on accounts	0.04	.....	0.79	.....	0.04	0.13	0.38	0.27
Total expense	22.24	18.73	22.81	21.90	23.46	26.25	14.79	21.89
Profit without miscellaneous income	—1.76	—0.26	1.16	—3.85	—1.21	0.70	1.31	—0.99
Add miscellaneous income	0.05	.....	.....	.....	4.03	0.55	0.80	1.79
Net profit	—1.71	—0.26	1.16	—3.85	2.82	1.25	2.11	0.80
Turnover	3.95	5.63	3.33	5.09	2.75	2.97	6.55	4.32
Per cent returned goods	1.31	2.73	1.24	1.24	1.52	.....	.....	1.61

Machinery

Orders for Single Tools and Miscellaneous Equipment Keeps Market at Good Pace—Few Large Inquiries Out—Crane Sales Light

APPARENTLY May is destined to outdo April in the way of machine tools and shop equipment, for sales are brisk in practically all districts. Large orders are lacking, but the volume of industrial tool purchases and sales of miscellaneous equipment is maintaining a good level. For the present, the automotive industry is doing little buying, but parts and accessory manufacturers have been good customers. Although several railroads have small lists outstanding, purchases have been limited to a few tools. The Erie is expected to issue a sizable list shortly. In the Pittsburgh area, the tendency for manufacturers to rehabilitate present equipment is affecting sales. Used equipment is moving well everywhere. Buying of cranes is exceedingly light.

New York, May 8.—Although comprised mainly of orders for individual machines, demand for machinery continues brisk. Some dealers look for this month to even exceed April, which for them was the best month so far this year. A prospective buyer is the Erie, which is expected to bring out a sizable business shortly. New York Central is expected to close soon on a 90-inch driving wheel lathe. The St. Louis-Southwestern has placed two or three heavy machines with eastern builders, it is reported. Buying of overhead and locomotive cranes is exceedingly light, with inquiry only moderate. Scattered machine tool orders include a jig borer for an ignition manufacturer in Ohio, a 22-inch vertical service grinder and a 16 by 36-inch lathe for an automobile builder in Indiana, and a 13 by 30-inch and a 16 by 60-inch lathe for an electrical company, all going to the Pratt & Whitney Co. This concern also booked a gear tooth grinder for a motor company in New Jersey and a 4-spindle drum type machine for a motor company in Michigan.

Chicago, May 8.—Aside from single-item inquiries from the Burlington and Chicago & North Western, interest on the part of western railroads in the machine tool market has been almost entirely lacking. The former road will buy a 2-inch double-head pipe threading machine, and the latter has put out an inquiry for a 14-inch lathe. Santa Fe has bought little against its list. Union Pacific has started to buy on its inquiry, and it is understood about $8000 to $10,000 worth of tools will be bought in the Chicago market. An industrial plant being erected in the Clearing district, Chicago, will buy $50,000 to $60,000 in machine tool equipment, but some of this will be purchased in the East. It is understood also that a large portion of that equipment will be used tools. Inquiry for used tools has become more active during the week. Sales of new equipment to industrial users were largely in smaller units and in single items. Inquiry was fairly active. Some of the road machinery builders to the north of Chicago are expected to be in the market. It is understood the Great Northern railroad will buy some welding equipment. Dealers in the Chicago district are counting on western railroad buying to bring up the totals of this month and next. Prices are reported steady.

Worcester, Mass., May 8.—While there is an absence of volume buying from any one interest, sales of individual units continue brisk and well spread. The dealers market is inclined to weakness due to numerous sales of used machinery, one list from a Rhode Island steelmaker going at low prices this week, while another unit of equipment of a Vermont machine shop goes under the hammer next week. Automatic machinery and lighter production tools are moving well. Grinding machinery continues steady, but weakness continues in the textile field with much used machinery on the market. Automobile makers continue to take production lathes, drills and other equipment.

Pittsburgh, May 8.—Numbers of manufacturers over a wide area are repossessing their present machine tool equipment, and this is bringing about the purchase of numerous repair parts. This extensive rejuvenation program is depriving sellers of expected orders for new machine tools. Miscellaneous orders for one or two units at a time are still fairly numerous and inquiries of that nature keep coming in, but volume is absent. Westinghouse Electric & Mfg. Co. placed four or five additional items on its list, including a heavy-duty turret lathe, a vertical miller, a vertical shaper, and one or two other items. Miller Saw Trimmer Co., Pittsburgh, is in the market for several used machines and may purchase some new equipment for its new building. Another local manufacturer is inquiring for three used machines. Pittsburgh Crucible Steel Co. bought several machines recently. Cranes are inactive at the present time, although a number of propositions are up for early closing.

Cleveland, May 8.—Dealers and manufacturers in this territory continue to be well occupied and orders are fairly numerous. Relatively few inquiries are abroad, which makes it impossbile to forecast far into the future. Sales develop on short notice and from sources not suspected of being in need of equipment. Early deliveries are requested in nearly all cases. At the moment the automobile industry is providing little in the way of orders, the bulk of sales coming from industrial channels of a wide variety. Automobile parts and accessory manufacturers have been steady customers. Smaller machinery houses are well pleased with the small miscellaneous purchases.

CRANE ORDERS PLACED

Two 2-ton special underhung sand slinger cranes and two electric follow-up cranes for International Harvester Co., Rock Island, Ill.; to H. D. Conkey & Co.

Three 10-ton handpower cranes for Atmospheric Nitrogen Corp., Syracuse, N. Y., for installation at Hopewell, W. Va.; to an unnamed seller.

Two 5-ton double-girder cranes for J. S. Kirk & Co., Chicago; to H. D. Conkey & Co.

Among single orders were: 100-ton crane for a power plant in Santa Clara valley, California, placed a month or so ago, but just announced. The crane is to replace one badly damaged by the breaking of St. Francis dam; 10-ton handpower crane for Public Service Production Co., Newark, N. J., to New Jersey Foundry & Machine Co.; 3-ton electric bridge crane for St. Louis Contracting Co., St. Louis, to H. D. Conkey & Co.; 10-ton hand-geared crane for A. Guthrie & Co., Calumet, Minn., to H. D. Conkey & Co.; 3-ton double-girder 3-motor crane for Samuel Olson & Co., Chicago, to H. D. Conkey & Co.

CRANE ORDERS PENDING

125-ton 4-motor crane with 25-ton auxiliary for Stevens & Wood, New York; for power plant installation in New Jersey.

7½-10-ton 3-motor crane for Weatherwax Supply Co., Jackson, Mich.; pending.

Byers Extends Option

Youngstown, O., May 8.—The A. M. Byers Co. has obtained an extension from Nov. 1, 1928, to Jan. 1, 1930, on the lease and option to purchase the plant of the American Puddled Iron Co., where the Ashton process for mechanical puddling is being developed. It is reported that the Byers interest is considering the construction of a new mechanical puddling plant, with a blast furnace and mills to produce other finished products than pipe.

Get Cold Strip Plant

Pittsburgh, May 8.—The Verona, Pa. plant of the Pittsburgh Cold Rolled Steel Co. has been acquired by a new organization of which M. C Summers, former president of the Thomas Sheet Steel Co., is president; A. H. Dillon, formerly with the Youngstown Sheet & Tube Co. is vice president; and D. S. Thomas a son of C. S. Thomas, is secretary and treasurer. The Verona plant has an annual capacity of 7000 tons of cold rolled strip from ½ to 16 inches.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

OLSEN MFG. CO., Kenosha, Wis., has been formed to take over the plant of the former Winther Motor Truck Co., more recently occupied by the Kenosha Fire Engine & Truck Co. Manufacturing operations were started May 1. Motor trucks will not be made. Equipment in the plant will be used for general machine work, dies, jigs, fixtures and parts. A repair and rebuilding department for motor trucks has been established. Standard parts are in stock. Later the company plans to introduce standard lines of equipment and machinery as part of its product. The new company is composed of H. P. Olsen, Milwaukee, Lester S. Olsen, and Robert E. Bussian, Racine, Wis., who will be in charge of the plant.

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PITTSBURGH-DES MOINES STEEL CO., Pittsburgh, has moved its offices from the Professional building to its plant on Neville island.

* * *

WAGNER ELECTRIC CORP., St. Louis, has moved its branch sales office in New York from 50 Church street to 30 Church street.

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COMBUSTIONEER INC., Chicago, manufacturer of automatic coal burning devices, has leased a one-story plant at 1829 South Fifty-fifth avenue, Cicero, a suburb. The plant has 18,000 square feet of floor space.

* * *

GRIFFIN WHEEL CO. has leased space for its executive headquarters in the New York Central office building, now under construction on Park avenue between Forty-fifth and Forty-sixth street, New York.

* * *

NEWDAY PRODUCTS is a newly organized company at Cleveland engaged in the manufacture of metal specialties at 1267 East Fifty-fifth street. Its products include lawn sprinklers, grills, moisteners and toys.

* * *

ROCKFORD IRON WORKS, Rockford, Ill., has been bought by I. Patrick, John W. Holstead and John L. Patrick, New York, all connected with the E. W. Bliss Co., manufacturer of presses. I. Patrick is president, Mr. Holstead vice president, and J. L. Patrick secretary and treasurer of the Rockford company. The plant will be enlarged and the manufacture of presses will be continued. The company was founded in 1848.

* * *

BARNES FOUNDRY CO., Cleveland, manufacturer of wood and metal patterns and brass, bronze and aluminum castings, has moved from its former location at 3181 West 104th street to the plant of the Pattern Engineering Co., 4007 Detroit avenue, which it has bought.

* * *

INGERSOLL-RAND DRILL CO., 314 North Broadway, St. Louis, has been succeeded by Ingersoll-Rand Inc. A branch operating under the St. Louis office has been opened at 226 West A street, Picher, Okla., to improve service to northern Oklahoma, Arkansas and southern Missouri.

* * *

DUAL DUTY CO., Alma, Mich., has been organized to manufacture an axle unit for Ford and Chevrolet trucks. Frank W. Ruggles, Alma, Mich., formerly president of the Republic Motor Truck Co., is president; H. E. Chatterton, Mt. Pleasant, Mich., vice president; Harley Williams, Alma, secretary; A. H. Madison, Lansing, Mich., treasurer.

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NULITE MFG. CO., 300 West Ontario street, Chicago, recently organized, is manufacturing an automobile spotlight and doing general chrome plating. Charles Neul is president, R. J. Fairbairn vice president, and George C. Knight secretary and treasurer. The company will not build a plant at present but may do so next winter.

* * *

ROYER FOUNDRY & MACHINE CO., Wilkes-Barre, Pa., recently has appointed two new representatives. Western Foundry Sand Co., Seattle, will represent it in Washington, Oregon and British Columbia. W. R. Tompkins is manager of the Western Foundry Sand Co. Canadian Foundry Supplies & Equipment, Ltd., Montreal, Que., will represent it in Newfoundland and Canada, except British Columbia.

* * *

NATIONAL FLUE CLEANER CO. INC., Groveville, N. J., manufacturer of soot cleaners, has appointed several new sales representatives: Walter G. Heacock, 30 Euclid arcade, Cleveland, and 413 Penobscot building, Detroit; Jack Deerwester Co., 1621 University avenue, St. Paul; Charles Zinram, Erie, Pa.; Laib Co., Louisville, Ky.

* * *

E. D. GIBERSON & CO. INC., 40 Rector street, New York, have opened a downtown warehouse at 549-553 West Thirty-seventh street, where they maintain stocks of welding wire, boiler tubes, seamless steel tubing for mechanical purposes, etc. In addition to the items handled above, E. D. Giberson & Co. Inc., are eastern sales representatives for the Lebanon Iron Co., Lebanon, Pa., manufacturers of bars, bolts, nuts, spikes, rivets, etc.

* * *

GATES-DAY AIRCRAFT CORP., Paterson, N. J., has been organized and has taken over the goodwill and technical records of the former Standard Aeronautical Works, Elizabeth, N. J. The airport at Teterboro, N. J., has been taken over and a plant at Paterson has been leased. Ivan R. Gates is president and Charles H. Day, chief engineer and vice president of the former company, is vice president. The Standard company manufactured airplanes during the World war. The assets were owned by Mitsui & Co., of Japan.

* * *

UNITED FUEL IMPROVEMENTS LTD., Hamilton, Ont., through stock ownership, has taken control of the Hamilton By-Product Coke Ovens Ltd., and the United Gas & Fuel Co. Ltd., both of Hamilton. A. T. Leavitt is managing director of the new company and president of the Hamilton By-Product Coke Ovens Ltd. He formerly was managing engineer with the Semet-Solvay Co., Syracuse, N. Y. The coke oven company produces domestic fuel and by-products, selling its gas to the United Gas & Fuel Co., which has distributed gas for more than 60 years. It has a capacity of 1000 tons of coal per day. Extensions will be made under the new management.

* * *

FARMER LUBRICATION SYSTEMS INC., whose reorganization and removal to Battle Creek, Mich.,

were noted in the March 28 issue of IRON TRADE REVIEW, is now known as Lubrication Devices Inc. It is located at 51-53 South Washington avenue, Battle Creek, Mich.

* * *

LAWRENCEVILLE BRONZE CO., Pittsburgh, has removed its headquarters from the Bessemer building to the Fulton building, Pittsburgh.

* * *

DAVID LUPTON'S SONS CO., Philadelphia, has moved its Chicago office from the Steger building to 333 North Michigan avenue.

* * *

EATON, RHODES & CO., Cincinnati, have been appointed agents by the Hamilton Coke & Iron Co., Hamilton, O., for the sale of its coke.

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J. MAYOU FOUNDRY SUPPLY CO., Chicago, has moved its offices to 1104 East Forty-seventh street, Chicago.

* * *

UDDEHOLM CO. OF AMERICA, INC., United States distributor of Uddeholm Swedish steel, has moved its offices to 342 Madison avenue, New York, in the Canadian Pacific building.

* * *

DONLEY MFG. CO., Cleveland, has occupied its new two-story addition and has added to its line of hardware specialties a steel settee and porch swing, and a new type of screen door silencer.

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ART IN BRONZE INC., Cleveland, manufacturer of bronze tablets and similar products, which occupied an addition to its plant several months ago, is considering a further addition to meet demands for space.

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EMPLOYERS' ASSOCIATION of Pittsburgh has moved its offices to 603 Oliver building. The employment department remains at 439 Third avenue. R. P. Kennedy is secretary and manager.

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ECLIPSE RAILWAY SUPPLY CO., Cleveland, manufacturer of car fenders, has added a trolley catcher and retriever, equipped with ball bearings. R. Forward is general manager and treasurer.

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CENTRAL IRON & STEEL CO., Harrisburg, Pa., has bought the property of the former Lochiel Rolling Mill Co. The furnaces will be dismantled. They have not been active for several years.

* * *

CHAIN PRODUCTS CO., Cleveland, has moved its office at New York from 150 Chambers street to the Graphic Arts Center building, 200 Varick street, where larger quarters for the sales division and for warehousing are available.

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BRIGGS & TURIVAS INC., Chicago, dealer in iron and steel scrap and railroad equipment, has moved its offices from 110 South Dearborn street to its plant at 139th street near Western avenue, Blue Island, Ill., a suburb of Chicago.

* * *

OIL WELL SUPPLY CO., Pittsburgh, has elected C. F. Cruciger, Gordon Fisher and W. C. Fownes Jr. as directors, succeeding Henry Lockhart Jr., E. M. Byers and Ernest Hillman. The new directors represent the interests of Spang, Chalfant & Co. Inc. Directors have re-elected the company's officers.

* * *

QUAD CITY FOUNDRYMEN'S ASSOCIATION, Rock Island, Ill., and adjoining cities, has elected officers as follows: President, A. D. Matheson, French & Hecht, Davenport, Iowa; vice president, F. W. Kirby, John Deere Spreader Works, East Moline, Ill.; secretary and treasurer, Hugo Wolf, Frank Foundries Corp., Davenport, Iowa.

* * *

NATIONAL ASSOCIATION OF ROLLED STEEL MANUFACTURERS, which includes the National Association of Sheet and Tin Plate Manufacturers, the Hot Rolled Strip Steel Institute and the Cold Rolled Strip Steel institute, has established its offices at 511 Terminal Tower building, Cleveland. The Sheet Steel Trade Extension committee occupies offices in conjunction with it.

* * *

BOX CRANE & HOIST CORP., Philadelphia, formerly Alfred Box & Co., is celebrating its fiftieth anniversary. It is one of the pioneer crane builders in America. Booklets recently have been published describing the various types of industrial lifting equipment made by this company, which includes electric traveling cranes, hand operated traveling cranes, electric hoists from one quarter ton to 15 tons capacity, monorail systems and I-beam trolley.

* * *

C & G. COOPER CO., Mount Vernon, O., has let a contract to the H. K. Ferguson Co., Cleveland, for a machine and tool building addition to its plant. The new structure will replace two old ones and add to the company's productive capacity. It will be 120 x 200 feet, of steel and brick. The company was started in 1833. It built the first steam locomotive west of the Alleghenies. Its main product is steam engines of the corliss type and they are in use in many well-known plants.

* * *

NATIONAL RESEARCH COUNCIL of Canada will increase its scope of activities by construction of laboratories at Ottawa, Ont. Dr. Henry Marshall Tory, president of the University of Alberta, has been made president of the council. The new laboratories will combine functions parallel to those of the bureau of standards at Washington and the Mellon Institute at Pittsburgh. The council will carry on national standardization and research service similar to that undertaken in other important industrial countries. The enlargement program calls for expenditure of $3,000,000 over ten years.

* * *

UNIT CORP. OF AMERICA, Milwaukee, has completed arrangements for acquisition of the Universal Power Shovel Co., Detroit, as another step in the consolidation of a number of allied industries. Recently announcement was made of the acquisition of Fuller & Sons Mfg. Co., Kalamazoo, Mich., maker of automotive transmission and gears. The original members of the merger are the Obenberger Forge Co., Milwaukee, and the Dallman Machine & Mfg. Co., Milwaukee. William Ford, brother of Henry Ford, is president, but will retire when the transfer becomes effective May 15. W. H. Schmidt is president of the Unit Corp.

* * *

SUTTON ENGINEERING CO., Park building, has booked the following orders: Wide hot strip leveler and two wide cold strip levelers for Trumbull Steel Co.; wide cold strip leveler for Weirton Steel Co.; copper sheet leveler for Taunton-New Bedford Copper Co.; fast cold drawn bar straightener for Bethlehem Steel Co.; two small cold drawn bar straighteners and two high-speed large cold drawn bar straighteners for Union Drawn Steel Co.; special high-speed seamless tube straightener for Jones & Laughlin Steel Corp.; large seamless tube straightener for Pittsburgh Steel Products Co.; top and bottom roll type straightener for automobile door and other sections for Columbia Steel & Shafting Co.; fast buttweld pipe straightener for Clayton Mark & Co.; fast bar straightener for Pittsburgh Crucible Steel Co.; fast airplane tube straightener for Summerill Tubing Co.; and a special machine for Canadian Tube & Steel Products Co., Montreal, Que.

1927 Steel Production Drops

Final Statistics of American Iron and Steel Institute Show Ingots and Castings Loss of 6.96 Per Cent—Finished Goods Decline 7.37 Per Cent

STEEL ingots and castings produced in the United States in 1927, with a total of 44,935,185 gross tons, fell about 7 per cent short of the record production of 1926, according to final statistics compiled by the American Iron and Steel institute. The decrease from the 48,293,763 tons of the preceding year was 3,358,578 tons, or 6.96 per cent, to be exact. Iron and steel rolled into finished forms, with a total of 32,879,031 gross tons, lacked a little more than 7 per cent of equaling the all-time record of last year.

Steel ingots amounted to 43,776,717 tons, which compared with the output of 46,936,205 tons in 1926, was a loss of 3,159,488 tons, or 6.74 per cent. Production of steel castings in 1927 with 1,158,468 tons shrunk 199,090 tons, or 14.69 per cent, from the 1,357,558-ton total of the preceding year. In 1926, steel ingots had established a new high record, but castings stood fifth.

Included in the 37,144,268 tons of basic open-hearth steel ingots and castings produced in 1927 were 2,184,674 tons of duplex steel ingots and castings which were made from metal partly purified in bessemer converters and finally purified in basic open-hearth steel furnaces, against 2,815,980 tons in 1926. Duplex steel made in 1925 was 2,797,318 tons and in 1924, 2,131,856 tons. Alloy steel was fourth highest on record with 2,266,439 tons, as compared with the record of 2,463,414 tons the year before. Of this amount, 2,120,595 tons was ingots and 145,844 tons was castings. Electric steel made up 343,517 tons of the total.

Finished rolled iron and steel in 1927 amounted to 32,879,031 tons, a decrease of 2,616,861 tons, or 7.37 per cent, from the 35,495,892-ton record of the preceding year. In spite of this shrinkage, production of rolled material has been exceed only in four other years, these being 1926, 1925, 1923 and 1917, in the order of their rank. Of the total finished rolled production last year, about 98.34 per cent was rolled from steel, against about 98.09 per cent in 1926 and 97.8 per cent in 1925. In 1927, about 36.79 per cent of the total was rolled in Pennsylvania and 21.18 per cent in Ohio.

Decreases in the production of important products ranged from 0.24 per cent for galvanized sheets to 12.8 per cent for rails. Plates and sheets declined 8.55 per cent; structural shapes, 4.33 per cent; merchant bars, 11 per cent; skelp, 9.17 per cent; and tin and terne plate, 6.1 per cent. On the other hand, wire rods increased 1.77 per cent, while concrete bars and nail plate made negligible gains. Rails decreased from 3,217,649 tons to 2,806,486; plates and sheets from 10,529,056 tons to 9,627,734 tons; structural shapes from 3,911,663 tons to 3,742,445 tons; merchant bars from 5,473,836 tons to 4,870,247 tons; skelp from 3,764,550 tons to 3,418,852 tons; tin and terne plate from 3,992,365,606 pounds to 3,748,844,920 pounds; galvanized sheets from 2,943,045,839 pounds to 2,936,116,258 pounds; and cut and wire nails from 15,531,301 100-pound kegs to 15,091,882 kegs. Wire rods increased from 2,722,032 tons to 2,770,271 tons; concrete bars from 815,829 tons to 816,013 tons; nail plate from 17,337 tons to 18,051 tons; and seamless tubes from 775,329 tons to 864,140 tons.

PRODUCTION OF STEEL INGOTS AND CASTINGS BY PROCESSES.

Years	Open-hearth			Bessemer	Crucible	Electric	Miscellaneous	Total, Gross tons
	Basic	Acid	Total					
1913	20,344,626	1,255,305	21,599,931	9,545,706	121,226	30,180	3,831	31,300,874
1914	16,271,129	903,555	17,174,684	6,220,846	89,869	24,009	3,622	23,513,030
1915	22,308,725	1,370,377	23,679,102	8,287,213	113,782	69,412	1,527	32,151,036
1916	29,616,658	1,798,769	31,415,427	11,059,039	129,692	168,918	604	42,773,680
1917	32,087,507	2,061,386	34,148,893	10,479,960	126,716	304,543	495	45,060,607
1918	32,476,571	1,982,820	34,459,391	9,376,236	115,112	511,364	329	44,462,432
1919	25,719,312	1,229,382	26,948,694	7,271,562	63,572	384,452	2,952	34,671,232
1920	31,375,723	1,296,172	32,671,895	8,883,087	72,265	502,152	3,535	42,132,934
1921	15,082,564	507,238	15,589,802	4,015,938	7,613	169,499	945	19,783,797
1922	28,387,171	921,812	29,308,983	5,919,298	28,606	346,039		35,602,926
1923	34,665,021	1,234,636	35,899,657	8,484,088	44,079	515,872		44,943,696
1924	30,719,523	857,827	31,577,350	5,899,590	22,473	432,526		37,931,939
1925	37,087,342	947,146	38,034,488	6,723,962	19,562	615,512		45,393,524
1926	39,653,315	1,038,664	40,691,979	6,934,568	15,493	651,723		48,293,763
1927	37,144,268	924,067	38,068,335	6,191,727	9,036	666,087		44,935,185

PRODUCTION OF STEEL CASTINGS.

1913	460,161	450,055	910,216	80,506	17,571	9,207	3,244	1,020,744
1914	334,144	270,173	604,317	65,882	11,186	8,551	3,310	693,246
1915	333,103	402,229	735,332	92,476	14,756	23,064	1,196	866,824
1916	605,512	570,937	1,176,449	142,791	9,351	42,870	302	1,371,763
1917	558,568	654,588	1,213,156	159,272	3,834	64,911	234	1,441,407
1918	505,880	634,950	1,140,830	160,844	1,330	108,296	110	1,411,410
1919	313,965	448,555	762,520	98,819	1,009	111,510	2,579	976,437
1920	449,330	537,070	986,400	104,980	1,729	155,196	3,237	1,251,542
1921	217,957	216,488	434,445	38,809	736	85,095	628	559,713
1922	425,981	404,767	830,748	47,733	1,045	154,982		1,034,508
1923	571,310	581,299	1,152,609	67,512	1,952	235,958		1,458,031
1924	456,518	402,901	859,419	53,437	1,377	206,549		1,120,782
1925	455,282	462,303	917,585	53,834	1,833	279,534		1,252,786
1926	480,627	505,379	986,006	43,066	2,041	326,445		1,357,558
1927	393,881	430,414	824,295	38,024	1,340	294,809		1,158,468

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS.

Years	Ingots	Castings	Total	Years	Ingots	Castings	Total
1914	577,107	69,846	646,953	1921	769,293	40,255	809,548
1915	923,251	97,896	1,021,147	1922	1,614,392	59,104	1,673,496
1916	1,306,157	56,458	1,362,615	1923	2,014,269	92,220	2,106,489
1917	1,576,806	67,529	1,644,335	1924	1,940,461	85,948	2,026,409
1918	1,721,367	66,485	1,787,852	1925	2,320,390	112,583	2,432,973
1919	1,435,816	45,372	1,481,188	1926	2,317,313	146,101	2,463,414
1920	1,591,939	68,353	1,660,292	1927	2,120,595	145,844	2,266,439

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS BY PROCESSES, GROSS TONS, 1927.

Processes	Ingots	Castings	Total
Open-hearth steel—basic	1,716,296	26,470	1,742,766
Open-hearth steel—acid	53,320	49,281	102,601
Bessemer steel	63,430	10,664	74,094
Crucible steel	3,189	272	3,461
Electric steel	284,360	59,157	343,517
Total Gross tons	2,120,595	145,844	2,266,439

TOTAL PRODUCTION OF ALL KINDS OF FINISHED ROLLED IRON AND STEEL, 1891-1927.

Years	Iron and steel rails	Plates and sheets	Nail plate	Wire rods	Structural shapes	All other finished rolled	Total Gross tons
1891	1,307,176	678,927	223,312	536,607		2,644,941	5,390,963
1892	1,551,844	751,460	201,242	627,829	453,957	2,579,482	6,165,814
1893	1,136,458	674,345	136,113	537,272	387,307	2,104,190	4,975,685
1894	1,021,772	682,900	108,262	673,402	360,305	1,795,570	4,642,211
1895	1,306,135	991,459	95,085	791,130	517,920	2,487,845	6,189,574
1896	1,122,010	965,776	72,137	623,986	495,571	2,236,361	5,515,841
1897	1,647,892	1,207,286	94,054	970,736	583,790	2,497,970	7,001,728
1898	1,981,241	1,448,301	70,188	1,071,683	702,197	3,239,760	8,513,370
1899	2,272,700	1,903,505	85,015	1,036,398	850,376	4,146,425	10,294,419
1900	2,385,682	1,794,528	70,245	846,291	815,161	3,575,536	9,487,443
1901	2,874,639	2,254,425	68,850	1,365,934	1,013,150	4,772,329	12,349,327
1902	2,947,933	2,665,409	72,936	1,574,293	1,300,326	5,383,219	13,944,116
1903	2,992,477	2,599,665	64,102	1,503,455	1,095,813	4,952,185	13,207,697
1904	2,284,711	2,421,398	61,601	1,699,028	949,146	4,597,497	12,013,381
1905	3,375,929	3,532,230	64,542	1,808,688	1,660,519	6,398,107	16,840,015
1906	3,977,887	4,182,156	54,211	1,871,614	2,118,772	7,383,828	19,588,468
1907	3,633,654	4,248,832	52,027	2,017,583	1,940,352	7,972,374	19,864,822
1908	1,921,015	2,649,693	45,747	1,816,949	1,083,181	4,311,608	11,828,193
1909	3,023,845	4,234,346	63,746	2,335,685	2,275,362	7,711,506	19,644,690
1910	3,636,031	4,955,484	45,294	2,241,830	2,266,890	8,475,750	21,621,279
1911	2,822,790	4,488,049	48,522	2,450,453	1,912,367	7,316,990	19,039,171
1912	3,327,915	5,875,080	45,331	2,653,553	2,846,487	9,908,475	24,656,841
1913	3,502,780	5,751,037	37,503	2,464,807	3,004,972	10,030,144	24,791,243
1914	1,945,095	4,719,246	38,573	2,431,714	2,031,124	7,204,444	18,370,196
1915	2,204,203	6,077,694	31,929	3,095,907	2,437,003	10,546,188	24,392,924
1916	2,854,518	7,453,980	30,088	3,518,746	3,029,964	15,493,093	32,380,389
1917	2,944,161	8,267,616	22,864	3,137,138	3,110,000	15,585,921	33,067,700
1918	2,540,892	8,799,135	18,310	2,562,390	2,849,969	14,385,058	31,155,754
1919	2,203,843	7,372,814	12,832	2,538,476	2,614,036	10,359,543	25,101,544
1920	2,604,116	9,337,680	20,577	3,136,907	3,306,748	13,941,835	32,347,863
1921	2,178,818	4,260,574	14,573	1,564,330	1,272,624	5,483,087	14,774,006
1922	2,171,776	7,968,397	21,969	2,654,741	2,718,768	10,916,353	26,452,004
1923	2,904,516	9,497,717	22,833	3,075,892	3,405,197	14,370,921	33,277,076
1924	2,433,332	8,087,883	22,175	2,522,545	3,283,708	11,736,792	28,086,435
1925	2,785,257	9,807,659	22,038	2,844,656	3,604,130	14,323,220	33,386,960
1926	3,217,649	10,529,056	17,337	2,722,032	3,911,663	15,098,155	35,495,892
1927	2,806,486	9,627,734	18,051	2,770,271	3,742,445	13,914,044	32,879,031

Finished Material Also Lower

PRODUCTION OF MERCHANT BARS, SHOWING IRON AND STEEL MERCHANT BARS SEPARATELY, GROSS TONS, 1906–1927.

Years	Iron	Steel	Total	Years	Iron	Steel	Total
1906	1,481,348	2,510,852	3,992,200	1917	983,926	5,226,031	6,209,957
1907	1,440,356	2,530,632	3,970,988	1918	846,898	5,395,851	6,242,749
1908	685,233	1,301,405	1,986,638	1919	446,549	3,945,075	4,391,624
1909	952,230	2,311,301	3,263,531	1920	663,032	5,467,208	6,130,240
1910	1,074,163	2,711,568	3,785,731	1921	198,324	1,367,430	1,565,754
1911	835,625	2,211,737	3,047,362	1922	317,665	3,660,993	3,978,658
1912	944,790	2,752,324	3,697,114	1923	404,730	5,148,066	5,552,796
1913	1,026,632	2,930,977	3,957,609	1924	258,737	4,022,184	4,280,921
1914	563,171	1,960,460	2,523,631	1925	290,488	5,368,827	5,659,315
1915	657,107	3,474,135	4,131,242	1926	252,437	5,221,399	5,473,836
1916	993,948	5,236,354	6,230,302	1927	187,965	4,682,252	4,870,247

PRODUCTION OF CONCRETE BARS, SHOWING IRON AND STEEL CONCRETE BARS SEPARATELY, GROSS TONS, 1910–1927.

Years	Iron	Steel	Total	Years	Iron	Steel	Total
1910	4,645	236,464	241,109	1919	2,295	416,726	419,021
1911	2,388	256,353	258,741	1920	698	571,747	572,445
1912	2,500	271,832	274,332	1921	1,094	226,134	227,228
1913	113	319,557	319,670	1922	696	575,120	575,816
1914		288,471	288,471	1923	368	680,499	680,867
1915		353,408	353,408	1924	507	655,615	656,122
1916	2,683	458,717	461,400	1925	1,195	818,392	819,587
1917	1,497	469,687	471,184	1926	1,649	814,180	815,829
1918	468	344,152	344,620	1927	2,428	813,585	816,013

PRODUCTION OF HEAVY AND LIGHT STRUCTURAL SHAPES, GROSS TONS, 1916–1927.

Years	Heavy shapes	Light shapes	Total	Years	Heavy shapes	Light shapes	Total
1916	2,649,961	380,003	3,029,964	1922	2,337,026	381,742	2,718,768
1917	2,575,810	534,190	3,110,000	1923	2,917,446	487,751	3,405,197
1918	2,438,126	411,843	2,849,969	1924	2,805,084	478,624	3,283,708
1919	2,136,424	477,612	2,614,036	1925	3,049,817	554,313	3,604,130
1920	2,741,120	565,628	3,306,748	1926	3,330,572	581,091	3,911,663
1921	1,082,727	189,897	1,272,624	1927	3,083,211	659,234	3,742,445

PRODUCTION OF SKELP, SHOWING IRON AND STEEL SKELP SEPARATELY, GROSS TONS, 1906–1927.

Years	Iron	Steel	Total	Years	Iron	Steel	Total
1906	391,517	1,137,068	1,528,585	1917	336,591	2,337,640	2,674,231
1907	444,536	1,358,091	1,802,627	1918	258,500	2,305,511	2,564,011
1908	297,049	853,534	1,150,583	1919	192,146	2,363,632	2,555,778
1909	370,151	1,663,230	2,033,381	1920	252,403	2,967,886	3,220,289
1910	350,578	1,477,616	1,828,194	1921	115,523	1,815,052	1,930,575
1911	322,397	1,658,276	1,980,673	1922	218,868	2,653,347	2,872,216
1912	327,012	2,119,804	2,446,816	1923	216,846	3,517,490	3,734,336
1913	312,746	2,189,218	2,501,964	1924	165,581	3,004,962	3,170,543
1914	264,340	1,718,091	1,982,431	1925	178,586	3,051,182	3,229,768
1915	262,198	2,037,266	2,299,464	1926	189,774	3,574,776	3,764,550
1916	355,445	2,572,229	2,927,674	1927	156,204	3,262,648	3,418,852

PRODUCTION OF SEAMLESS STEEL TUBES, GROSS TONS, 1922–1927

Years	Hot finished	Cold drawn	Total	Years	Hot finished	Cold drawn	Total
1922	120,652	137,183	257,835	1925	403,965	164,225	*568,190
1923	202,669	201,114	403,783	1926	620,936	154,393	*775,329
1924	131,758	129,399	261,157	1927	725,970	138,170	*864,140

PRODUCTION OF TINPLATES AND TERNE PLATES, 1896–1927.

Years	Tinplates	Terne plates	Total pounds
1896	270,151,785	89,058,013	359,209,798
1897 (first 6 months)	203,028,258	49,545,643	252,573,901
1897 (second 6 months)			322,205,619
1898 (calendar year)			732,289,600
1899			808,360,000
1900 (cen. year end. May 31)	707,718,239	141,285,783	*850,004,495
1901 (calendar year)			894,411,840
1902			806,400,000
1903			1,075,200,000
1904 (cen. year end. Dec. 31)	867,526,985	158,857,866	*1,032,940,706
1905 (calendar year)			1,105,440,000
1906	1,100,373,000	193,367,000	1,293,740,000
1907	996,650,000	156,447,000	1,153,097,000
1908	1,048,896,000	154,179,000	1,203,075,000
1909	1,179,858,000	190,930,000	1,370,788,000
1910	1,450,821,000	168,184,000	1,619,005,000
1911	1,597,629,000	158,441,000	1,756,070,000
1912	1,965,659,000	191,396,000	2,157,055,000
1913	1,708,186,000	136,944,000	1,845,130,000
1914	1,939,785,000	146,195,000	2,085,980,000
1915	2,201,825,054	163,470,646	2,365,295,700
1916	2,552,224,275	214,176,952	2,766,401,227
1917	3,233,314,911	153,891,653	3,387,206,564
1918	3,216,247,675	85,376,569	3,301,624,244
1919	2,407,156,757	171,859,924	2,579,016,681
1920	3,079,953,351	158,067,437	3,238,020,788
1921	1,675,320,852	103,853,961	1,779,174,813
1922	2,707,648,715	177,235,512	2,884,884,227
1923	3,168,263,546	†207,106,248	3,375,369,794
1924	2,975,231,674	†202,553,793	3,177,785,467
1925	3,458,574,585	†254,885,172	3,713,459,757
1926	3,750,481,879	†241,883,727	3,992,365,606
1927	3,513,497,164	†235,347,756	3,748,844,920

* Includes 1,000,473 pounds in 1900 and 6,555,855 pounds in 1904 of "other sheet iron and sheet steel, tin or terne plated." † Includes 152,471,643 pounds of long terne plates in 1927, 152,457,892 pounds in 1926, 163,820,675 pounds in 1925, 107,986,974 pounds in 1924, and 106,764,720 pounds in 1923.

PRODUCTION OF CAST-IRON PIPE, NET TONS, 1922–1927.

Years	Gas and water *	Soil and plumbers	Total	Years	Gas and water *	Soil and plumbers	Total
1922	926,577	356,872	1,283,449	1925	1,414,252	510,483	1,924,735
1923	1,134,059	432,828	1,566,887	1926	1,534,278	469,228	2,003,506
1924	1,365,272	476,078	1,841,350	1927	1,488,644	553,871	2,042,515

* Includes culvert pipe.

PRODUCTION OF IRON AND STEEL GALVANIZED SHEETS AND GALVANIZED FORMED PRODUCTS, 1917–1927.

Years	Galvanized sheets	Galvanized formed products *	Total Pounds
1917	1,273,978,805	114,902,171	1,388,880,976
1918	1,159,778,807	121,110,267	1,280,889,074
1919	1,500,575,548	140,494,884	1,641,070,432
1920	1,871,360,951	143,894,730	2,015,255,681
1921	1,366,883,503	109,956,328	1,476,839,831
1922	2,109,991,396	165,713,067	2,275,704,463
1923	2,364,862,856	165,741,098	2,530,603,954
1924	2,228,960,835	155,901,514	2,384,862,349
1925	2,539,112,552	178,219,576	2,717,332,128
1926	2,788,473,075	154,572,764	2,943,045,839
1927	2,767,615,399	168,500,859	2,936,116,258

PRODUCTION OF PLATES AND SHEETS BY KINDS, 1926–1927.

Kinds	1926—Gross tons			1927—Gross tons		
	Iron	Steel	Total	Iron	Steel	Total
Universal plates*	5,543	1,402,004	1,407,547	2,704	1,241,845	1,244,549
Sheared plates—						
Rolled on single stands	211	2,193,071	2,193,282	74	1,888,134	1,888,208
Roughed and fin. on sep. stands		600,353	600,353	0	588,053	588,053
Black sheets rolled on sheet or job. mills	4,645	4,232,834	4,237,479	4,726	3,974,311	3,979,037
Black plates, including black plates for tinning and black plate specialties rolled on tin mills		2,090,395	2,090,395	0	1,927,887	1,927,887
Total	10,399	10,518,657	10,529,056	7,504	9,620,230	9,627,734

* Include flats or bars over 6 inches wide.

PRODUCTION OF WROUGHT PIPE AND SEAMLESS STEEL TUBES, INCLUDING BOILER TUBES, GROSS TONS, IN 1927.

Kinds of pipe or tubes	Lap weld and butt weld pipe or tubes—Gross tons			Seamless pipe or tubes—Gross tons		
	Iron	Steel	Total welded	Hot finished	Cold drawn	Total seamless
Black, standard	65,712	1,172,071	1,237,783	13,628	689	14,317
Galvanized	41,765	446,467	488,232	2,030		2,030
Oil country goods	19,583	1,180,353	1,199,936	560,309	683	561,002
Mechanical tubes				16,219	78,947	95,166
O.D. & miscellaneous		144,515	144,515	6,201	28,219	34,420
Boiler tubes	11,898	35,087	46,985	127,583	29,622	157,205
Total	138,958	2,978,493	3,117,451	725,970	138,170	864,140

PRODUCTION OF MISCELLANEOUS ROLLED PRODUCTS, GROSS TONS.

Products	1923	1924	1925	1926	1927
Hoops	220,835	179,373	205,049	189,814	176,300
Bands and cotton-ties	348,480	294,269	356,165	355,926	323,129
Long angle splice bars, fish-plate bars, tie plate bars, etc.	749,824	629,786	822,537	953,563	864,992
Rolled sheet piling	36,716	49,679	57,264	57,189	74,793
Railroad ties	20,167	14,968	13,826	13,278	13,826
Rolled forging blooms, forging billets, etc.	448,870	346,915	344,803	362,750	285,527
Blooms, billets, sheet bars, tinplate bars, etc. for export	781	437	187	430	549
Spike and chain rods, bolt and nut rods, horseshoe bars, hot rolled strips, shafting, tires, blanks (for seam. tubes, etc.	*2,577,249	*2,113,779	*2,814,719	*3,110,980	*3,069,816
Total	4,402,922	3,629,206	4,614,550	5,043,940	4,808,932

PRODUCTION OF CUT NAILS IN 100-LB. KEGS, 1900–1927.

Years	Production	Exports	Consumption	Years	Production	Exports	Consumption
1900	1,573,494	250,053	1,323,441	1914	769,665	76,676	692,989
1901	1,542,240	208,359	1,333,881	1915	775,327	94,878	680,449
1902	1,633,762	161,228	1,472,534	1916	764,835	106,451	658,384
1903	1,435,893	199,126	1,236,767	1917	461,674	101,362	360,312
1904	1,283,362	207,720	1,075,642	1918	418,811	85,668	333,143
1905	1,357,549	176,741	1,180,808	1919	394,477	65,423	329,054
1906	1,189,239	169,519	1,019,720	1920	844,583	86,427	758,156
1907	1,109,138	155,212	953,926	1921	538,834	24,512	514,322
1908	956,182	157,319	798,863	1922	810,206	78,602	731,604
1909	1,207,597	222,565	985,032	1923	829,604	51,515	778,089
1910	1,005,233	182,087	823,146	1924	741,668	47,537	694,131
1911	967,636	255,854	711,782	1925	736,111	36,265	699,846
1912	978,415	208,568	769,847	1926	662,403	23,979	638,424
1913	842,038	84,885	757,153	1927	702,836	25,715	677,121

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BRISTOL, CONN.—New Departure Mfg. Co. contemplates additions and improvements in its ball bearing manufacturing plant, to include the erection of a new building, 45 x 65 feet.

WATERVILLE, ME.—Maine Central railroad, 222 St. John street, Portland, Me., has awarded the contract for construction of a car shop and paint storehouse here.

BALTIMORE—Bethlehem Shipbuilding Corp. has awarded the general contract for a 1 and 2-story shipbuilding unit to Consolidated Engineering Co., 20 East Franklin street. (Noted April 12.)

BOSTON—Standard Machinery Co. has been incorporated with 100 shares no par value to manufacture all kinds of machinery and appliances, by Morris B. White, 237 Chestnut street, Chelsea, Mass.

CAMBRIDGE, MASS.—Car Fastener Co. has been incorporated with $1,000 in preferred shares to manufacture metal fasteners, etc., by Ralph G. Boyd, 1 Langdon street, Cambridge.

LYNN, MASS.—Aerial Services Co. has been incorporated with $25,000 in preferred shares, to manufacture airplanes, by Oliver N. Tongberg, 37 Bassett street, Lynn.

MALDEN, MASS.—Lappin Bros. Inc. has been incorporated with 100 shares no par value stock to manufacture and install plumbing appliances, machinery, etc., by Hyman Lappin, 180 Cross street, Malden.

NEW BEDFORD, MASS.—Highway Services Inc. has been incorporated with $100,000 in preferred shares to manufacture power driven mechanical sand spreaders and other machinery, by Milton Burghardt, Fairhaven, Conn.

QUINCY, MASS.—Emfree Mfg. Co. has been incorporated with 500 shares no par value stock to manufacture machinery and appliances, by Arthur W. Weeden, 29 Brockton avenue.

AUDUBON, N. J.—New Matix Equipment Co. has been incorporated with 500 shares no par value stock to manufacture and deal in pneumatic tools by Corporation Trust Co., Philadelphia.

CAMDEN, N. J.—Standard Tank & Seat Co. has awarded the contract for a 3-story plant addition 32 x 78 feet, to be built at 314 North Front street.

CAMDEN, N. J.—Radio Condenser Co., Copewood and Thorn streets, manufacturer of radios, supplies, etc., has awarded the general contract for a 1-story plant addition, 95 x 145 feet, to Carl L. Furner, 96 Kendall boulevard, Oaklyn.

CLIFTON, N. J.—Betz Bros. Inc., manufacturer of metal doors and trim, has moved into its new plant at Ann street and Pleasant avenue.

JERSEY CITY, N. J.—134-140 Park Avenue Inc. has been incorporated with $2500 capital to manufacture motion picture cameras by Goldstein & Goldstein, New York, attorneys.

JERSEY CITY, N. J.—Standard Weather Strip & Screen Co. has been incorporated with 1000 shares no par value stock by Heyman & Heyman, Jersey City, attorneys.

JERSEY CITY, N. J.—Humidor Corp. has been incorporated with 25,000 shares no par value to manufacture humidors by Corporation Trust Co., Jersey City.

NEWARK, N. J.—Bolton Bros. Inc. has been incorporated with $125,000 capital to manufacture belting, by W. A. Brooks, Newark, attorney.

NEWARK, N. J.—Art Metal Works, 7 Mulberry street, plans to build a 2-story plant addition.

NEWARK, N. J.—Roller Bearing Co. of America, 141 Frelinghuysen avenue, will move to the plant of the Mercer Motor Car Co. which it has purchased.

NEWARK, N. J.—Karl Bracher Mfg. Co. has been incorporated with 1000 shares no par value stock to manufacture and deal in tools, by Pomereline, Laible & Kautz, Newark, attorneys.

PATERSON, N. J.—Crescent Aircraft Corp. has been incorporated with $20,000 capital to manufacture airplanes, by Barsha & Meadow, 160 Broadway, New York, attorneys.

PATERSON, N. J.—Wright Aeronautical Corp., Martin street, has awarded the general contract for a 4-story manufacturing plant, to J. W. Ferguson, 152 Market street. (Noted April 26.)

TRENTON, N. J.—State board of education plans to establish a machine and repair shop for the repair of typewriters and office machines, at the New Jersey School for the Deaf.

ALBANY, N. Y.—Ramsey Chain Co. Inc., A. B. Farrell, 1031 Broadway, manager, has awarded the contract for a 1 and 2-story plant to William Sayles & Son, 266 Hudson avenue.

BINGHAMTON, N. Y.—Fairbanks Valve Works was damaged by fire recently.

BINGHAMTON, N. Y.—Afga-Ansco Mfg. Co., formed recently for the manufacture of cameras, tripods, etc., will soon start work on a new plant, 200 x 700 feet. (Noted March 15.)

CARTHAGE, N. Y.—National Electric Time Co. has been incorporated with $10,000 capital to manufacture and deal in time clock systems, by Kilby, Norris & Smith, Carthage, attorneys.

NEW YORK—Riverside Steel Co. has been incorporated with $25,000 capital by Barsha & Meadow, 160 Broadway, attorneys.

NEW YORK—O. B. Capps has been incorporated with $25,000 capital to manufacture locomotives, by L. V. Axtell, 11 Moore street, attorney.

NEW YORK—Junkers Corp. of America Inc., 342 Madison avenue, contemplates establishing a Middle Western plant to manufacture airplanes, parts, etc.

NEW YORK—Globe Electric Sign Corp. has been incorporated with 150 shares no par value stock by Konowitz & Eder, 1440 Broadway, attorneys.

NEW YORK—E. K. P. Co. has been incorporated with $25,000 capital to manufacture and deal in vending machines, by J. B. Miller, 165 Broadway, attorney.

NEW YORK—General Machine Co. has been incorporated with $100,000 capital to manufacture and deal in tools and devices by Moore, Hall, Swain & Cunningham, 505 Fifth avenue, attorneys.

ROME, N. Y.—Rome Hollow Wire & Tube Co. has been incorporated with $20,000 capital by A. S. Evans, Rome, attorney.

AMBRIDGE, PA.—American Bridge Co. is enlarging its plant and moving some equipment here from Gary, Ind. The old foundry buildings are being razed and a new plant will be built.

HAZLETON, PA.—Reading Coal & Iron Co., Reading terminal, Philadelphia, plans to electrify its plants at Hazleton, Wilkes-Barre and vicinity and is negotiating for motors, hoists, etc.

HUGHES PARK, PA.—Bridgeport Iron Works, W. R. Browne president, Bridgeport, has awarded the contract for a 1-story foundry,

Resale News

NEW PROCESS IRON & STEEL CO., Noblesville, Ind., which has been in the hands of receivers for some time, will be sold shortly to the highest bidder. Judge Fred E. Hines of the circuit court, will set a date for the sale. No bids have been offered for the business at private sale. The plant has been appraised at $60,000.

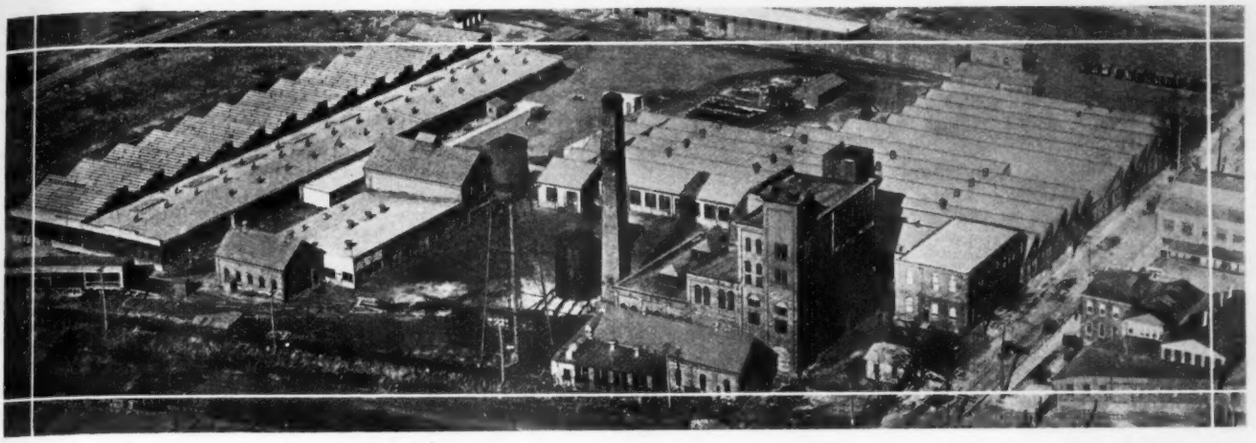
* * *

Machinery and equipment of the former Wills Ste. Claire plant at Marysville, Mich., closed since November, 1927, has been sold to A. Shiffman and Friedeberg, New York, who will dispose of it at private sale. The buildings have not been sold.

Sales Calendar

May 18—Bids opened on waste material including cast iron and brass at Ft. Niagara, N. Y.

May 23—Machinery and equipment of Ohio Body & Blower Co., Cleveland, to be sold at auction in piecemeal lots by Industrial Plants Corp.



By purchase of the entire plant of the Mercer Motor Car Co., Trenton, N. J., the Roller Bearing Co. of America has enlarged its capacity greatly. Additional equipment will be needed in the new plant

95 x 200 feet, to Friend-Reiff Co., 310 Norristown, Pennsylvania Trust building, Norristown.

PHILADELPHIA—H. S. Hagert Inc., 1923 Manning street, manufacturer of lighting equipment, fixtures, etc., plans to build a plant addition.

PHILADELPHIA—Acme Coppersmithing & Machinery Co., J. Epstein, 1024 Ridge avenue, manager, plans to build a 4-story plant, 109 x 240 feet, at Berks and Hancock streets.

PHILADELPHIA—S. Scullin, Cambria and American streets, contemplates rebuilding that part of the foundry which was damaged in a recent fire.

PHILADELPHIA—E. H. Reuss Jr., Thirtieth and Race streets, has awarded the contract for a 1 and 2-story pipe bending shop and office building to Wark Co., 1600 Walnut street. (Noted March 8).

PITTSBURGH—Structural steel has been awarded to the W. N. Kratzer Co., Pittsburgh, for the addition to the Sterrit-Thomas Foundry Co.

PITTSBURGH—Miller Saw Trimmer Co. soon will award the contract for a 1 and 2-story plant, 261 x 293 feet. Hunting, Davis & Dunnels, Century building, are architects.

PITTSBURGH—Dravo Contracting Co., Neville Island, plans to build a 1-story plant addition, 100 x 142 feet.

PAWTUCKET, R. I.—Blackstone Valley Gas & Electric Co. has started work on its new power house 20 x 150 feet.

BARNET, VT.—New England Power Co., Worcester, Mass., plans a hydroelectric power plant on the Connecticut river near here.

NORTH POWNAL, VT.—Commonwealth Portland Cement Corp., contemplates building a new cement plant, and will require machinery, machine tools and other equipment.

CHICAGO—V. Bendixen, 2300 Bloomingdale avenue, has awarded the contract for a foundry addition 31 x 73 feet.

CHICAGO—Allied Industrial Products Co., manufacturer of grinding wheels, buffing and polishing equipment, is building a 2-story plant at 17-19 North Elizabeth street.

CHICAGO—American Can Co., 104 South Michigan avenue, has awarded the contract for a 3-story plant, 145 x 165 feet, to be built at 6005 South Western avenue.

CHICAGO—Chicago Pump Co., 2336 Wolfram avenue, has awarded the contract for a plant addition for the manufacture of house pumps. (Noted April 19.)

CHICAGO—Pierce Mfg. Co., 625 West Jackson boulevard, has been incorporated with $15,000 capital to manufacture and deal in electrical and mechanical specialties and apparatus, by E. C. Pierce, Irene Hagemann and Rae Garfield.

CHICAGO—Atlas Stores Inc., 532 South State street, has been incorporated with $5000 capital to manufacture and deal in radio apparatus and electrical materials, by J. W. Cohn, Leonard Cohn and Nathan L. Cohn.

CHICAGO—Chicago Trail Mobile Co., 3900 South Wabash avenue, has been incorporated with $10,000 capital to manufacture and deal in automobile trailers, vehicle bodies, etc., by Leo Share, M. M. Worker and Henrietta Rabin.

CHICAGO—Everyned Products Co., 208 South La Salle street, has been incorporated with 400 shares no par value stock to manufacture and deal in kitchen utensils of all kinds by Sidney Levy, Solomon Kurz and H. M. Oberndorf.

CHICAGO—Chicago Solder Co., 4201 Wrightwood avenue, is erecting a 2-story plant addition.

CHICAGO—Nulite Mfg. Co., 300 West Ontario street, has been incorporated with $30,000 capital to manufacture spot lights of all kinds by William Neul, Charles Neul and G. C. Knight.

CHICAGO—T. L. Maisch & Co., 1709 Arthur avenue, has been incorporated with $15,000 capital to manufacture and deal in metal and other specialties, by J. S. Dashko, T. L. Maisch and Florence Maisch.

CHICAGO—Nufold Furniture Co., 811 Eastwood avenue, has been incorporated with 100 shares no par value stock to manufacture and deal in metal and wooden folding furniture, parts, etc., by Finn Simmons, George V. Groh and N. N. Holzmark.

MATTOON, ILL.—Brown Shoe Co., St. Louis, will install electric power equipment in a plant it plans to build here.

MOLINE, ILL.—Deere & Co. has awarded the structural steel contract for a building, to an unnamed interest. (Noted April 26.)

MOLINE, ILL.—George Evans Corp. plans to build a plant addition for the manufacture of tanks and has awarded the general contract to Axel Carlson Construction Co.

NASHVILLE, ILL.—Illinois Power Shovel Co., Mine road, has been incorporated with $20,000 capital to manufacture and deal in power shovels and machinery, by John L. Clarkson, Samuel Day and E. E. Campbell.

SPRING GROVE, ILL.—Pyramid Radio Corp. has been incorporated with $10,000 in preferred shares and $5000 in common shares stock, to manufacture and deal in radios, electrical equipment and supplies, by A. J. Richardson, M. J. Rauen and William J. Bracken.

EDWARDSPORT, IND.—Fire recently damaged the engine room of the River Valley Mine Co.

DETROIT—Copeland Products Inc., manufacturer of electric refrigeration machinery, is completing work which will double the production facilities.

DETROIT—Impression Die Co., 3155 East Willis street, has awarded the general contract for a 1-story plant addition to Max Bartholomai Son & Co., 1574 East Warren street.

FLINT, MICH.—F. J. Boutell, 1404 Chippewa street, plans to build a 3-story service garage. George Bachman, 313 Flint P. Smith building, is architect.

FLINT, MICH.—AC Spark Plug Co. has awarded the contract for a 3-story plant addi-

tion to W. E. Wood Co., Ford building, Detroit. (Noted April 26.)

FLINT, MICH.—Durant Motors Inc. is inquiring for machinery and equipment for the 1 and 2-story addition to its plant to be built at Lansing. (Noted April 26.)

JACKSON, MICH.—Macklin Mfg. Co., T. McIntyre president, is inquiring for machinery and equipment for the manufacture of automobile wheels, and also for four baking kilns. (Noted May 3.)

MONROE, MICH.—Monroe Auto Equipment Co., East First street, is inquiring for machine shop equipment for its proposed auto plant addition.

MT. CLEMENS, MICH.—Selfridge Field will build field machine shops as part of an improvement program to be carried out this year at this army flying field.

ATHENS, O.—Artcraft Metal Works of the J. B. Grayson Mfg. Co., D. E. Williams manager is inquiring for metalworking equipment for the manufacture of porch lanterns, bronze and brass specialties, etc., in its new shop.

CINCINNATI—Fountain-Way Corp., recently incorporated with $300,000 capital for the manufacture of washing machines, plans to build a 1-story plant in Mariemont, suburb of Cincinnati. Louis F. Ducker is president of the company.

CLEVELAND—Acme Electric & Mfg. Co., Hamilton avenue, plans the installation of new production devices and machinery for the production of its line of radio accessories.

CLEVELAND—Nokarbon Oil Burner Co. will operate a plant at 8612 Superior avenue, for the manufacture of oil burners. It is expected that the company will build a larger and permanent plant soon.

LIMA, O.—Davidson Enamel Products Co. has awarded the contract for a plant addition, 60 x 110 feet, to the Lima Construction Co. The building will be ready about the middle of July.

MANSFIELD, O.—Aungst Bros., metal workers, are completing a 2-story plant, 60 x 62 feet.

MINERVA, O.—American Electric Switch Corp. has built an addition to its plant, connected with the old plant by a runway and electric conveyor.

MT. VERNON, O.—C. & G. Cooper Co., manufacturer of engines and power equipment, has awarded the contract for a new plant 120 x 200 feet, to H. K. Ferguson Co., Cleveland.

NEWARK, O.—May-Fieberger Furnace Co. is completing a new plant.

WILLOUGHBY, O.—Economy Engineering Co. has awarded the contract for a 1-story plant addition for the manufacture of automatic bolt and nut machinery to Frank S. Bones & Son, Willoughby.

APPLETON, WIS.—Appleton Machine Works, C. E. Saecker, president, plans to build a 1-story foundry and pattern storage building.

MENOMONEE FALLS, WIS.—Damage was caused by fire in the foundry and machine shop of the Menomonee Falls Mfg. Co., which only recently took occupancy of the building. Besides operating a gray iron foundry, the concern manufactured bottle-washing machinery. H. Krause is vice president and general manager.

MILWAUKEE—Milwaukee File & Rasp Co., 389 Tenth street, has increased its capital stock from $5000 to $15,000 and is planning to extend its capacity and production.

MILWAUKEE—Capital stock of the National Plating Co., 43-45 Eighth street, Milwaukee, has been increased from $50,000 to $75,000 to finance development of plant and business. Details have not been made public.

MILWAUKEE—The city of Milwaukee, department of public works, is placing contracts for a 2-story building, 100 x 120 feet, at Clinton and Virginia streets, for the construction and repair of fire fighting equipment. Machinery will be purchased later. R. E. Stoelting is commissioner.

MILWAUKEE—Milwaukee Ornamental Brass & Iron Works Inc. has been incorporated with $25,000 capital to manufacture and cast brass, iron, etc., into gas and electric fixtures, lamps, novelties, etc. The headquarters are at 685 Booth street. Incorporators are Bernard, Joseph and Antony Breuer, 1124 Richards street.

NEENAH, WIS.—The general contract for erecting the new senior high and vocational training school here has been awarded to Pehrson Bros., Minneapolis. Architect John D. Chubb, Chicago, is handling the project.

RANDOLPH, WIS.—The city plans to buy boilers, switchboards, generator and other equipment for its light plant.

WAUKESHA, WIS.—Arthur Fairbanks, 646 Madison street, has started work on the erection of a fireproof welding and machine shop, 30 x 50 feet.

West Central

BLOOMFIELD, IOWA—Rolscreen Co. plans to build a plant addition, 30 x 70 feet, to take care of increasing business.

LAKE CITY, MINN.—Gillette & Eaton Inc. is building an addition to its foundry to accommodate increasing business.

MINNEAPOLIS—Northwestern Power Co. has awarded the contract for structural steel for a building, to Minneapolis Steel & Machinery Co.

MINNEAPOLIS—Simplex Heat Regulator Inc. has been formed with $50,000 capital to purchase and reorganize the Simplex Heat Regulator Co. and plans for doubling the plant capacity are under formation. It is likely that a new plant will be constructed.

ST. LOUIS—Anheuser-Busch Inc., Ninth and Pestalozzi streets, contemplates remodeling the present power house and building a plant addition.

ST. LOUIS—American Car & Foundry Co., Syndicate Trust building, plans to install power plant equipment at its Dorcas street plant here. (Noted April 12.)

HASTINGS, NEBR.—Hastings Casket Co., F. A. Mitchell secretary, has awarded the general contract for a 2-story plant.

BISMARCK, N. DAK.—International Harvester Co. of America, 606 Michigan avenue, Chicago, plans to build a sales and service station, 100 x 130 feet, here.

GRAND FORKS, N. DAK.—Great Northern railroad, 175 East Fourth street, St. Paul, has awarded the general contract for building a roundhouse addition and a work shop to Carl Steen, 520 South Fifth street, Grand Forks. (Noted April 12).

Southern States

BIRMINGHAM, ALA.—Alabama Power Co. has awarded the contract for structural steel for a steam plant on the Warrior river, to Nashville Bridge Co., Nashville, Tenn.

TUSCALOOSA, ALA.—E-Z Opener Bag Co., Decatur, Ill., plans to build a group of buildings including a machine shop, 100 x 100 feet.

NEW ALBANY, MISS.—Inland Utilities Co., Kansas City, Mo., is concluding negotiations for the purchase of the municipal light plant here and has plans for enlarging it.

RALEIGH, N. C.—The iron castings plant of the Hiner Supply & Mfg. Co. was damaged by a fire recently. C. N. Hiner is owner of the company.

WATERVILE, N. C.—Structural steel has been let for a hydroelectric power plant here, to Virginia Bridge & Iron Co., Roanoke, Va.

PONCA CITY, OKLA.—Airmotor Corp. contemplates building an airplane plant, and is having plans drawn.

NASHVILLE, TENN.—Victor Chemical Co., 343 South Dearborn street, Chicago, includes a steam power plant in a plant projected for this city.

AMARILLO, TEX.—Tri-State Wheel & Mfg. Co. has been incorporated by J. J. Crume, Amarillo building.

DALLAS, TEX.—Reo Motor Co. of Texas Inc. plans to build a 2-story service, sales and repair building, 100 x 200 feet, with the second floor to be used for machine shop service.

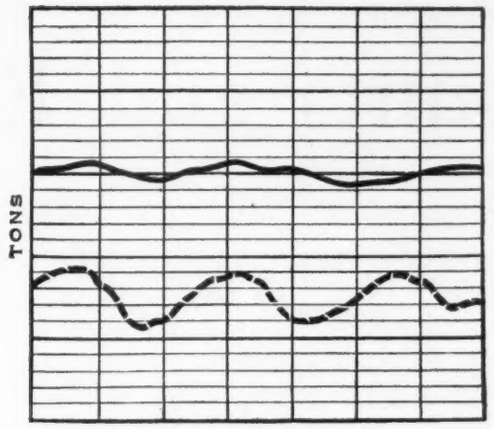
FORT WORTH, TEX.—Fort Worth Structural Steel Co. has been incorporated with $75,000 capital by J. H. Brillhart, Arlington Heights.

HOUSTON, TEX.—Dedman Foundry & Machine Co., Buffalo street, has been incorporated with $160,000 capital by H. W. Dedman, C. E. Newton and A. E. Amerman.

QUANAH, TEX.—West Texas Utilities Co. is building the first unit of a power plant at Lake Pauline.

SAN ANTONIO, TEX.—Rylander Cotton Machines Co. has been incorporated with $50,-

(*Concluded on Page* 1266)



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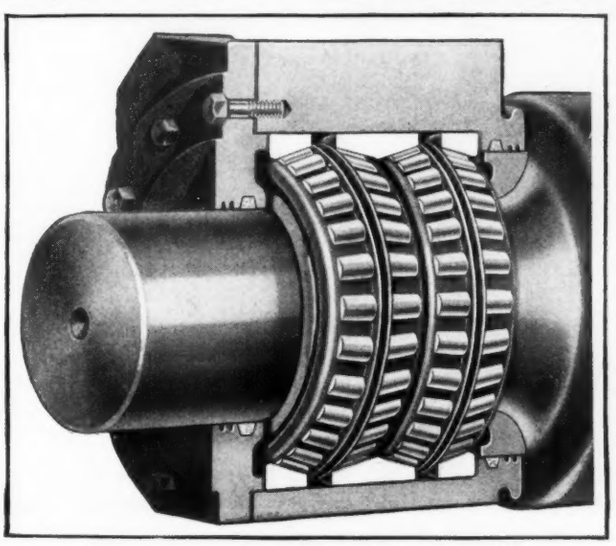
THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* BEARINGS



Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized. Extra 5 per cent granted in the 4th quarter 1927 and 1st quarter 1928 discontinued April 2, 1928.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

	Butt Weld	Lap Weld
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 3-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 and 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 5 on black and 1½ and 5 on galvanized.)

Boiler Tubes

Pittsburgh carload discounts. Less carloads 4 points less

STEEL (Lap Weld)

2 and 2¼-inch	27 off
2½ and 2¾-inch	37 off
3-inch	40 off
3¼ to 3¾-inch	42½ off
4 to 13-inch	46 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+18
1¾-inch	+ 8
2 and 2¼-inch	2 off
2½ to 3-inch	7 off
3¼ to 4½-inch	9 off

(Note—Additional discounts of one 10 to two 10's and one 5 now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c
Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier	

GAGE

Plates not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds per square foot .20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot, .20c

Plates ordered 7.65 pounds per square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B.	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charles for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extra

Under 5 feet to 3 feet inclusive....	.10c
Under 3 feet to 2 feet inclusive.....	.25c
Under 2 feet to 1 foot inclusive.....	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive....	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

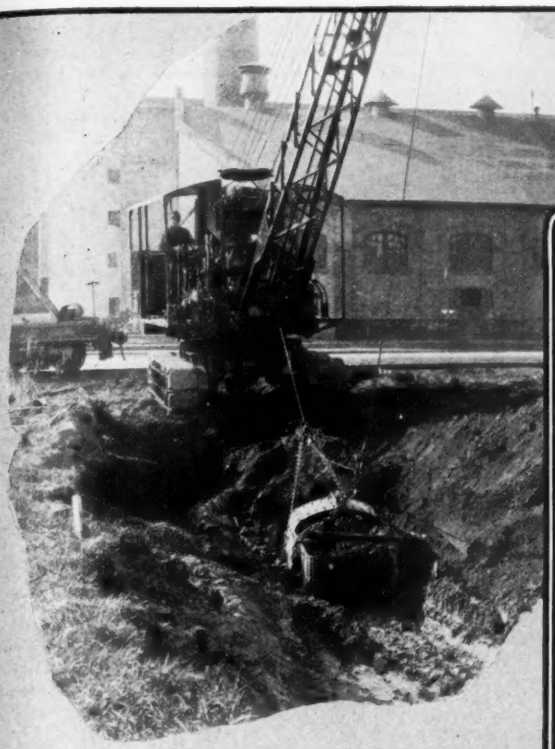
With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c

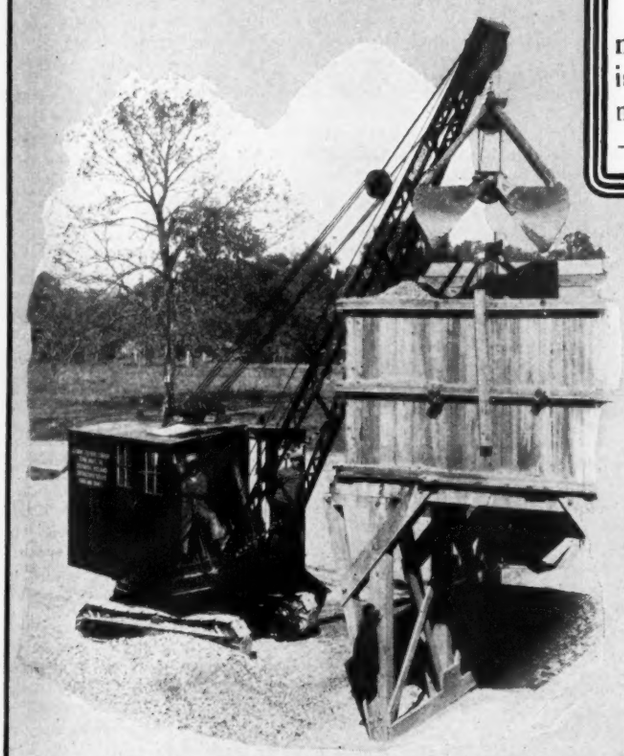


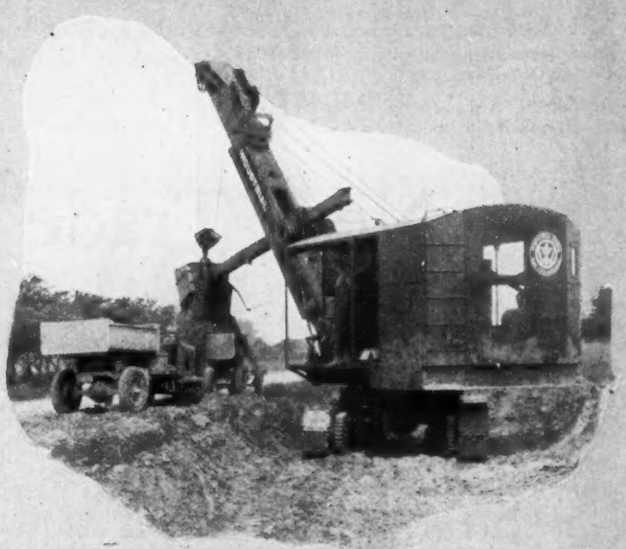
Crawlers for Every Need

You want one kind of crawler for your job—the next fellow may need an entirely different type—but whatever you need, our complete line will give you a machine that couldn't do your work better if it were designed especially for you.

Here is a line-up of shovels, in sizes from ½ to 1¼ yards, with mechanical features that will speed up the most difficult handling or excavating job. Each is quickly convertible to crane, dragline or trench hoe.

Our job for fifty years has been to manufacture handling equipment that is profitable to the user. We've saved money for over ten thousand owners—can't we do the same for you?





Industrial Brownhoist Corporation

General Offices: Cleveland, Ohio.

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, St. Louis, San Francisco, New Orleans, Bay City, Mich.

INDUSTRIAL BROWNHOIST

Construction and Enterprise

(*Concluded from Page* 1262)

000 capital by W. W. McAllister, Builders Exchange building.

SAN ANTONIO, TEX.—Contract for second unit of generating plant at New Braunfels, Tex., has been let to United Gas Improvement Contracting Co. of Philadelphia by San Antonio Public Service Co. New unit will have capacity of 30,000 kilowatts.

ROANOKE, VA.—Stauffer Chemical Co., Grand Central Terminal, New York, includes a boiler plant in a local plant project.

CALGARY, ALTA.—The waterpower site at Ghost Falls has been leased by the Calgary Power Co., of which G. A. Gaherty is managing director. A plant will be installed to develop 15,000 horsepower. No announcement has been made as to when tenders will be called or construction work started.

ELKO, B. C.—Elk River Syndicate Ltd., Waldo, B. C., is contemplating the construction of a power plant and pulp mill at Phillips Canyon on Elk River near here.

WINNIPEG, MAN.—Electric Radios Ltd. has been incorporated to manufacture and deal in electric, automotive, wireless, radio, and other machinery with 100,000 capital by Fred E. H. Luke, Lynden A. Fonseca, and Robert W. Killy.

LINDSAY, ONT.—Lindsay Motors Ltd. has been incorporated to manufacture and deal in automobiles, motors, engines, and machines, with 4000 shares no par value stock, by Leslie M. Frost, Cecil G. Frost, and Orville Culbert.

LONDON, ONT.—Bids are being called by Watt & Blackwell, Bank of Toronto Chambers, for a 1-story plant addition for Richards Wilcox Canadian Co., Chelsea Green, manufacturer of builders' hardware, fire doors, iron and steel products, etc. Addition to be 78 x 190 feet, brick construction.

LONDON, ONT.—Taylor Electric Mfg. Co. Ltd., 526 Adelaide street, has awarded contract to James Moran & Sons, 957 Maitland street, for a plant addition for the manufacture of electric switches, motor starters, etc. Building to be 1-story, 75 x 150 feet, brick construction. Watt & Blackwell, Bank of Toronto Chambers, architects.

OSHAWA, ONT.—General Motors of Canada Ltd., has let contract to the Jackson-Lewis Co. Ltd., Federal building, Toronto, Ont., for a 1-story plant, 60 x 70 feet.

OTTAWA, ONT.—Roby's Supplies Ltd. has been incorporated to carry on the business of sheet metal workers and roofers, and the manufacture of builders' supplies, with $50,000 capital and 10,000 shares no par value stock by Hall W. Cameron, Charles J. Charlebois, Joseph E. Decarie.

TORONTO, ONT.—Steel Co. of Canada plans to establish a modern unloading and storage dock adjacent to the steel plant in Hamilton.

TORONTO, ONT.—Toronto Airport Ltd. has been incorporated to manufacture and deal in airplanes and air craft, with $500,000 capital and 1000 shares no par value stock by Ernest M. Lee, Alfred Bunting and John H. Wood.

TORONTO, ONT.—W. W. Pearse, business administrator and secretary-treasurer, board of education, 155 College street, Toronto, is receiving bids until May 14 for equipment and tools for machine, woodworking and electrical departments for new Collegiate institute here.

TORONTO, ONT.—Wells & Gray Ltd., Confederation Life building, have the general contract, and have awarded a number of sub-trades in connection with structural steel plant to be erected on Fleet street for Reind & Brown Ltd., 63 Esplanade east. Building will be 1 story, 70 x 300 feet, steel and brick construction.

TORONTO, ONT.—Canadian Paperboard Co., 32 Front street west, has awarded contract to W. J. Trimble, 73 Adelaide street west, for a 2-story building on Commissioner street, adjoining its plant now under construction, to be used for a power plant. Building will be 41 x 80 feet, reinforced concrete, steel and brick. Babcock-Wilson & Goldie McCulloch Ltd., Bank of Hamilton building, has the contract for boilers; stokers will be supplied by the Illinois Stoker Co., Alton, Ill. Contract for steam turbines and switchboard to be let. Engineers are Kerry & Chase, Confederation Life building, Toronto.

WALLACEBURG, ONT.—The plant of the Ontario Boat & Engine Works, here was damaged by fire April 22.

WELLAND, ONT.—Board of education, W. Lowe secretary, is inquiring for machinery and equipment, including lathes, drills, woodworking equipment, etc., for proposed vocational school shops.

MONTREAL, QUE.—Perkins Electric Co. Ltd. has been incorporated to manufacture and deal in electrical machines, machinery, appliances and apparatus, with $150,000 capital by Ernest H. Cliff, Frank B. Chauvin and Harold E. Walker.

MONTREAL, QUE.—Paper Mill Equipment Ltd. has been incorporated to manufacture machinery supplies, apparatus and equipment, with $12,500 capital and 400 shares no par value stock by Francis G. Bush, Herbert W. Jackson and Alexander G. Yeomans.

MONTREAL, QUE.—Canadian Ohmer Ltd. has been incorporated to manufacture and deal in machinery, machines, apparatus, and appliances, with $25,000 capital and 5000 shares no par value stock by Claude S. Richardson, Francis G. Bush, and Herbert W. Jackson.

New Trade Publications

STARTERS—Monitor Controller Co., Baltimore, has a bulletin on its type of starters. It is fully illustrated and construction and operation of the device is explained in detail.

WELDING—Fusion Welding Corp., Chicago, a division of the Chicago Steel & Wire Co., has issued a bulletin on its welder, calling attention to details which eliminate difficulties.

SHEET METAL MACHINERY—Niagara Machine & Tool Works, Buffalo, has issued a catalog of its machines for forming sheet metal, illustrated and with specifications of each machine.

MILL MOTORS—General Electric Co., Schenectady, N. Y., in a booklet on its mill motors, reviews the process of standardization through which this type of motor has passed. Illustrations supplement the text.

CONCRETE ADMIXTURE—Celite Products Co., Los Angeles, has issued a bulletin for insertion in its file, a specification sheet for architects and engineers, covering the use of celite in concrete. The water-cement ratio is also discussed.

HERRINGBONE GEAR—Palmer-Bee Co., Detroit, has published a catalog of its herringbone gears and herringbone and mill-type spur gear speed reducers. It contains tables of horsepower ratings, dimensions of standard size units, a list of advantages claimed over open drives and instructions on installation and lubrication.

GRINDERS—Blanchard Machine Co., Cambridge, Mass., has issued a catalog of its vertical surface grinder. In addition to complete description and illustrations of the machine, illustrations show typical work, with production data. Specifications cover details of construction.

STEEL CONSTRUCTION—American Institute of Steel Construction Inc., New York, has prepared a leaflet calling attention to fundamental factors in stadium construction. Cost per seat for construction is given and illustrations show methods used in several structures. Ease of reconstruction in case of foundation settlement and possibility of removal to another site are claimed.

PIPE COUPLINGS—Case Hardening Service Co., Cleveland, is distributing a bulletin of the Victaulic Co. of America, New York, describing its pipe couplings. These consist of two half-housings, two bolts and a leak-proof ring. Installation is simple and quickly accomplished. Ample illustrations show application and results under vacuum and pressure. Tables of data are provided.

IRON AND STEEL—An unusual iron and steel warehouse handbook has been issued by Horace T. Potts & Co., jobbers, Philadelphia. It contains 164 pages, and directs attention to a personnel provided not only with technical training, but also "with a knowledge of the latest treatments and developments in the field of steel." In addition to listing products carried in stock, the handbook contains an extended purpose chart to aid users in determining the grade of steel best adapted for certain purposes, and this chart also specifies the quenching media and temperatures. The handbook is the fifteenth the company has published and marks the 113th year of iron and steel warehousing for this company, which began in Philadelphia in 1815, with members of the Potts family as proprietors ever since. Those now controlling the company and actively engaged in it are Harrison I. Potts, Thomas C. Potts, Horace M. Potts, Charles William Potts, Guy B. Bible and Morris E. Neeley.